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ABSTRACT

This guide is intended to assist vocational administrators assuming a facilitative and leadership role in the development and implementation of programs to help vocational students acquire and develop transferable skills. The guide is divided into three parts. Part 1 provides examples of the skills and discusses their importance in two broad areas: (1) group problem-solving, including interpersonal, group process, problem-solving, decision-making, planning, communication, and thinking/reasoning skills; and (2) organizational and management skills, including such areas as business economics, business operations, management, statistical quality control, and quality of work life principles and techniques. The following implementation strategies are discussed in Part 2: infusion; application (the transfer process, similarities between transfer situations, and identification of the important parts of a task); cooperation; integration; and barriers to effective information (lost opportunities, implicit goals/uninformed participants, and the importance of a team approach). Part 3 presents examples of activities to develop problem-solving, interpersonal, computation, and communication skills. Appendixes present examples of transferable skills and characteristics and sources of additional information. (MN)

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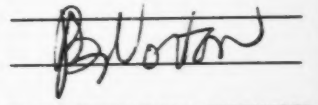

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TRANSFERABLE SKILLS: AN ADMINISTRATOR'S GUIDE

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FOREWORD

Since 1978, a group of states has been working cooperatively with the National Center for Research in Vocational Education to develop leadership training materials for vocational and technical education personnel at the secondary and postsecondary levels. The efforts of this consortium have focused on the development of competency-based administrator education modules and guides on critical issues and areas of management responsibility. During the 1987-88 consortium year, the teaching of transferable skills to occupational students was identified as an area of concern, which resulted in the preparation of this administrator's guide.

Several persons participated in the development of this document. Frank C. Pratzner, Senior Research Specialist, wrote the document. Credit also goes to Robert E. Norton, Consortium Director, for providing leadership and content reviews of the guide.

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Ray D. Ryan
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EXECUTIVE SUMMARY

Transferable skills are broadly applicable and useful skills in which relatively high levels of proficiency have been obtained. The transferability of a skill is a question of (1) the range of different settings where it is potentially useful and (2) level of proficiency that one has developed in the skill.

Vocational education has a shared responsibility with other educational programs to contribute to the development of transferable skills. It is unique among educational programs in its potential for doing so because it provides many opportunities for hands-on experiential approaches to learning and for the extensive practice of such skills.

The guide presents examples of transferable skills and discusses instructional strategies that can be employed to teach them. Although a definitive list of transferable skills does not exist, there is reasonable consensus about a number of broad categories of skills, knowledge, and personal characteristics such as communications, computation, problem solving, decision making, planning, reasoning, and interpersonal skills. Examples of some lists of broadly applicable skills are provided.

Administrators have an essential facilitative and leadership role in the implementation and development of transferable skills. The administrator is in a key position to create the necessary team attitude and approach to the identification of opportunities for the development of transferable skills. In the role of facilitator, the administrator must seek and acquire new materials, ideas, and resources for the development of transferable skills. Ensuring that these resources and ideas get into the hands and thinking of key instructional staff requires the strong commitment and expertise of the administrator.

TRANSFERABLE SKILLS: WHAT ARE THEY?

Transferable skills are broadly applicable, widely useful, and durable skills in which relatively high levels of proficiency have been attained. Transferable skills are important ingredients of occupational adaptability, and adaptability in the workplace is a characteristic of growing importance to individual workplace survival and growth. Vocational administrators and teachers, therefore, must be aware of the importance of transferable skills and take action to see that such skills are appropriately addressed in the vocational curriculum.

The transferability (or generalizability) of a skill is not only a function of its potential range of application and use, but it is also a function of the level of proficiency that one has developed in the skill. As illustrated below in Figure 1, all skills are potentially transferable to some extent and on some occasion.

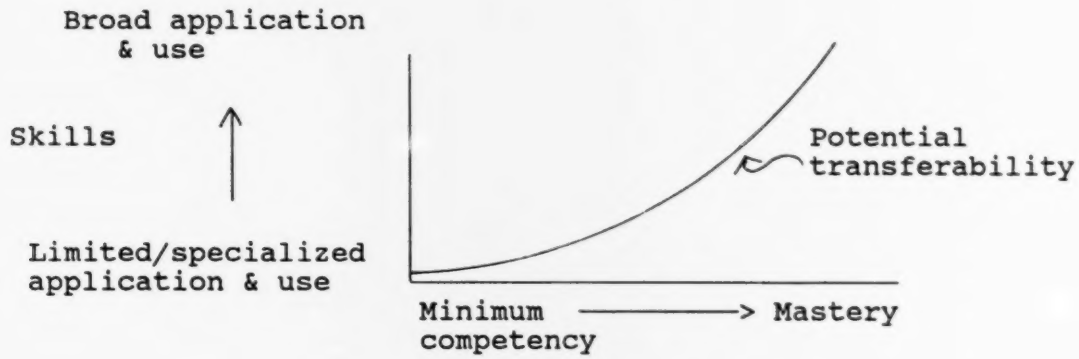

Figure 1. Level of proficiency and transferability

Thus, any skill learned to mastery or to a high level of proficiency is potentially more transferable and useful than one that has only been developed to minimum levels of proficiency or competency. The potential transferability of a skill is a function of (1) the range or variety of different settings and situations where it is potentially applicable and useful and (2) the level of proficiency that one has developed in the skill (Pratzner 1978).

Vocational education has a shared responsibility with other educational programs to contribute to the development of transferable skills and occupational adaptability. This is unique among educational programs in its potential for doing so because it provides many opportunities for hands-on experiential approaches to learning and for the extensive practice of skills. As we will see later in this guide, both of these approaches are thought to be critical to the development of transferable skills.

Assuming that vocational educators choose to develop transferable skills as an objective of their programs, they are likely to ask at least two critical and interrelated questions: first, What would the content of such a program look like? and second, What instructional strategies should be employed to teach it? (Pratzner and

Ashley 1985). As a vocational school administrator, you have an important curriculum development leadership role to perform in seeing that these questions are answered. You will also need to help with the curriculum change process, for without your leadership, little significant change is likely to occur.

Examples of Transferable Skills

In response to the first question, it is unlikely that an entire and separate curriculum for transferable skills will be forthcoming in the near future, nor is it likely to be necessary. However, it is necessary to have a sample list of transferable skills and have them defined at a level of specificity that will enable instructors to integrate them into the curriculum and to estimate the levels of proficiency to which they have been developed.

Although a definitive list of transferable skills does not exist, there appears to be reasonable consensus about a number of broad categories such as communications, computation, problem solving, decision making, planning, reasoning, and interpersonal skills. Examples of several lists of broadly applicable skills are provided in appendix A of this guide.

Exhibit 1 provides a detailed list of transferable skills. This list grew out of an examination of developments in the American workplace (Pratzner and Russell 1984a). Extensive reviews of the literature on the changing workplace together with discussions and interviews with business and industry representatives suggested that to function effectively, workers and managers not only need good basic skills and technical skills, but they increasingly need improved skills and knowledge in two broad areas. Those areas as shown in figure 1 are (1) group problem-solving skills (including such areas as interpersonal and group process skills, decision making, planning and communications) and (2) the organization and management of work (including such areas as business economics, business operation, statistical quality control, and quality of work life developments).

Importance of Transferable Skills

The accelerating rate of change is the single characteristic of work in America that is experienced by most adults. Among the many forces that have and will continue to reshape adults' work lives well into the next century are the shift from an industrial to a service and information-based economy, the internationalization of that economy, and the increasing use of technology in the workplace (Pratzner and Ashley 1985, p. 14). These rapid changes in the work environment strongly suggest that vocational administrators and teachers must do all they can to prepare their students for the career changes they are likely to encounter. Hence the use of a systematic approach to identifying and teaching transferable skills is deemed very important.

There are at least two broad types or classes of changes in work that are pushing us toward the need for greater adaptability and transferable skills. One type of change has to do with job mobility. That is, the movement of individuals from one job to another or the movement into and out of the labor market. Job mobility continues to be pervasive. It is the result of individuals seeking different jobs for a variety of

Exhibit 1

EXAMPLES OF TRANSFERABLE, BROADLY APPLICABLE SKILLS

Group Problem Solving

Interpersonal Skills

- o Work effectively under different kinds of supervision (i.e., flexibility).
- o Work without the need for close supervision.
- o Show up on time for activities and appointments (i.e., punctuality/ reliability).
- o Work effectively when time, tension, or pressure are critical factors for successful performance (i.e., perseverance).
- o See things from another's point of view (i.e., empathy).
- o Engage appropriately in social interactions and situations.
- o Take responsibility and be accountable for the effects of one's own judgments, decisions, and actions (i.e., responsibility).
- o Plan, carry out, and complete activities at one's own initiative (rather than be directed by others, i.e., diligence/initiate).
- o Speak with others in a relaxed, self-confident manner.
- o Initiate task-focused or friendly conversations with another individual.
- o Accomplish cross-training, retraining, and upgrading activities effectively.

Group Process Skills

- o Work cooperatively as a member of a team.
- o Get along and work effectively with people of different personalities.
- o Explain persuasively the logic or rationale underlying judgments, decisions, and actions arrived at by a group or a team to which you belong (i.e., group participation/ responsibility).
- o Coordinate one's own tasks and activities with those of others.
- o Instruct or direct someone in the performance of a specific task.

- Demonstrate to someone how to perform a specific task.
- Assign others to carry out specific tasks (i.e., delegating responsibility).
- Initiate and draw others into task-focused or friendly group conversations.
- Join in task-focused or friendly group conversations.
- Plan and convene group meetings.
- Lead and manage group meetings.
- Lead a group to resolution of disputes or conflicts in the views, opinions, or positions among its members in order to achieve consensus on decisions or actions.
- Follow established procedures for group participation and decision making.

Problem-solving Skills (tolerance of and dealing with uncertainty/ambiguity)

- Recognize or identify the existence of a problem, given a specific set of facts (i.e., an anomaly, ambiguity, uncertainty).
- Continue to function effectively in the face of ambiguity or uncertainty.
- Ask appropriate questions to identify or verify the existence of a problem.
- Formulate alternative descriptions or statements relating a problem to its possible cause.
- Identify important information needed to solve a problem.
- Generate or conceive of possible alternative solutions to a problem.
- Describe the application and likely consequences of possible alternative problem solutions.
- Compare the application and likely consequences of alternative problem solutions and select a solution that on-balance represents the best course of action to pursue.

Decision-making Skills

- Estimate the potential of some event's occurrence and the probable consequences.
- Project resource requirements for alternative scenarios.
- Determine relevance and quality of available data and information.

- Identify information that is needed and that could be located or generated.
  - Delineate values and assumptions underlying various options.
  - Use appropriate process or choice models in order to facilitate making a decision.

Planning Skills

- Set priorities for the order in which several tasks will be accomplished.
- Set the goals or standards for accomplishing a specific task.
- Enumerate a set of possible activities needed to accomplish a task.
- Determine how specific activities will assist in accomplishing a task.
- Select activities to accomplish a specific task.
- Determine the order of the activities or step-by-step process by which a specific task may be accomplished.
- Estimate the time required to perform activities needed to accomplish a specific task.
- Select the materials, tools, equipment, or other resources to perform the activities needed to accomplish a specific task.
- Periodically revise or update activities and plans for accomplishing a specific task.

Communication Skills

A. Words and Meanings

- Use plural words appropriately in writing and speaking.
- Use appropriate contractions and shortened forms of words (by use of an apostrophe) in writing and speaking.
- Use appropriate abbreviations of words in writing and speaking.
- Use words appropriately that mean the same thing as other words but are spelled differently (e.g., big, large, tall, high).
- Use words correctly that sound the same as other words but that have different meanings and spellings (e.g., dear, deer, meat, meet).
- Use words appropriately that are opposites of one another (e.g., white, black, up, down).

- o Use good word choices in writing and speaking.
- o Add appropriate beginnings and endings to words to change their meaning (e.g., work, rework, change, changeable).
- o Punctuate one's own correspondence, directives, or reports.

B. Reading

- o Gather information or data from books, manuals, directories, or other documents.
- o Read graphs, charts, and tables to obtain factual information.
- o Read short notes, memos, and letters.
- o Read forms.
- o Look up the meaning, pronunciation, and spelling of words in a standard dictionary.
- o Look up names, numbers, and other information (e.g., dialing instructions) in a telephone directory to make local and long-distance calls.
- o Review and edit other's correspondence, directives, or reports.

C. Writing

- o Compose written correspondence, directives, memos, or reports (i.e., connected discourse).
- o Write sentences or phrases to fill out forms accurately.

D. Speaking

- o Speak fluently with individuals and groups.
- o Pronounce words correctly.
- o Speak effectively, using appropriate eye contact, posture, and gestures.

E. Listening

- o Restate or paraphrase a conversation to confirm one's own understanding of what was said.
- o Ask appropriate questions to clarify another's written or oral communications.

- o Attend to nonverbal cues, such as eye contact, posture, or gesture, for meanings in others conversations.
- o Take accurate notes from spoken conversations.

Reasoning Skills

- o Generate or conceive of new or innovative ideas.
- o Try out or consciously attempt to use previously learned knowledge and skills in a new situation (i.e., make a transfer hypothesis--"I wonder if situation B is somehow or other related to or like situation A, and if so, can I use this knowledge or skill in this new situation?")
- o Explain the main idea in another's written or oral communication.
- o Recall ideas, facts, and other information accurately from memory.
- o Organize ideas and put them into words rapidly in oral and written connected discourse.
- o Interpret feelings, ideas, or facts in terms of one's own personal viewpoint or values.
- o State one's point of view, opinion, or position.
- o Defend one's opinion, point of view, or position.
- o Distinguish between fact and opinion in one's own and in others' written and oral communication.
- o Compile one's own notes from several written sources into a single report.
- o Compile ideas, notes, and materials supplied by others into a single report.
- o Carry out correctly written or oral instructions given by another.
- o Observe another's performance of a task to identify whether the performance is satisfactory or needs to be improved.
- o Ask questions about another's performance of a task to identify whether the performance is satisfactory or needs to be improved.

EXHIBIT I - continued

Organization and Management

Business Economics

- o Estimate profit margin and primary production expenses for the company.
- o List primary governmental regulations affecting company.
- o Delineate critical factors affecting company productivity.
- o Discuss international, national, or local (whichever is most appropriate) economic conditions as they affect company stability.
- o Make cost-savings suggestions for improvement.
- o Estimate savings due to company from various changes in process.
- o Discuss free-enterprise, capitalist, socialist, and communist, economic/governmental modes of operation.

Business Operations

- o Name organizational functions within the company (i.e., manufacturing, marketing, finance, personnel, etc.) and each of their goals.
- o Discuss the nature of the relationship between functions.
- o Develop organizational charts showing alternative ways of organizing.
- o Explain concepts of centralization and decentralization, division of labor, informal and formal organization.

Management

- o Name and briefly describe the major management theories (e.g., Theory X and Y, Managerial Grid).
- o Delineate possible factors within an organization that may affect performance and productivity.
- o Describe different forms of communication within an organization and provide examples.
- o Discuss the concepts of power, control, authority, and delegation.
- o Analyze functions within one job or operation.
- o Describe factors affecting change process within an organization and discuss potential blocks or constraints to the implementation of change.

EXHIBIT 1 - continued

- o Name criteria upon which work performance could or should be evaluated; discuss appraisal processes and purposes.
- o Apply career development concepts to individual planning.

Statistical Quality Control

- o Define concepts of universe, sampling, variability, random selection, central tendency, dispersion, correlation, standard deviation.
- o Define specification, defects, tolerance, control limits, inspection, and quality control.
- o Develop mock checksheets, histograms, cause-and-effect diagrams, pareto charts, milestones or timeline charts, bar graphs, pie charts, scatter diagrams, and pictographs.
- o Develop a control chart and describe its various components and purpose.
- o Complete the following types of exercises:
  - add, subtract, multiply, and divide whole numbers, fractions, and decimals;
  - solve word problems;
  - compute percentages, averages;
  - use a calculator; and
  - perform metric conversions.

Introduction to Quality of Work Life (QWL)

- o Learn definitions of QWL concepts and approaches.
- o Learn underlying QWL philosophy and rationale.
- o Learn about QWL history and development.
- o Learn about QWL methods and techniques.

SOURCE: Pratzner and Russell 1984a, pp. 47-53.

personal reasons. Or, it results from changes imposed on individuals by their employment conditions--jobs disappear or are created by new technology, changes in consumer demand, or structural changes in the economy. In any case, the ability to adapt to change and the ability to transfer skills to new applications and uses is important.

Another pervasive type of change in work that often requires significant individual adaptability is change within jobs, occupations, or firms. These changes may or may not result in the desirability or necessity for individuals to leave their employment or their job, but if they remain, workers may need to make substantial adjustments in their performance and they may require upgrading and retraining.

Thus, the idea that one set of occupational skills can be learned once and should last a lifetime does not seem to be valid. There is a need to help individuals at any age to prepare not only for a job, but for careers characterized by change.

Schools cannot prepare students for all unknown future contingencies. But it does seem reasonable to expect them to help students develop their individual potentials and capacities to levels of proficiency useful in a wide range of situations. By such development, they may be adaptable and better able to perform successfully in changing environments (Pratzner 1978, p. 1).

Examples of transferable skills and knowledge in the two broad skills areas noted earlier are shown in exhibit 2, along with some of the associated reasons for their need in business and industry. The following sections further clarify and explain the importance and need for these broad categories of transferable skills.

Group Problem-solving Skills

Having workers and managers participate in problem-solving groups requires vastly different analytical skills than when workers are told what to do by management and are not expected to think. Many people in work settings, and many students, do not have the skills to work successfully in groups doing complex problem-solving (National Assessment of Educational Progress 1982). Most people have not been trained in how to solve problems in a group. To throw people together in a room and tell them "to solve problems" or "make decisions" and expect them to produce meaningful results is wholly unreasonable (Nadler and Lawler 1983).

Although group problem-solving skills have long been recognized as important for management staff, they are being recognized today as important to all levels of employees. Group problem solving can be effective as a means of change and improvement in quality, costs and employee morale. The old belief that "two heads are better than one" has been confirmed with evidence that cooperative approaches to work are more effective than competitive approaches (Johnson et al. 1981). This means that all employees will need to work together more to diagnose problems and implement effective solutions.

Group problem-solving utilizes such skills as (1) interpersonal and group process skills, (2) communication skills, and (3) thinking and reasoning skills. These are all complex, non-job-specific skills needed for effective participation in groups that focus on problem identification and solution. And they are not specific to particular firms or work settings. Rather, they are broadly applicable skills transferable to and useful in a wide range of work settings.

EXHIBIT 2

TRANSFERABLE SKILLS/KNOWLEDGE/ABILITIES
NEEDED FOR WORK

Skill Area	Reason for Need in Business/Industry
I. Group Problem Solving	Group problem solving is one of the primary modes for change and improvement in high involvement companies
A. Interpersonal Skills	
o Self-directed	To enhance flow of ideas
o Flexible	To reduce need for supervision/inspection
o Assertive	To change as market conditions change
o Open	To reduce inefficiencies due to personal conflicts
o Curious to learn	To reduce nonproductive time
o Able to share/teach	To profit from people's individual motivations
o Responsible	To promote sharing/cooperation
o Understanding of behavior	To encourage continuous improvement
	To facilitate individual and corporate growth
	To acknowledge and encourage input from workers at all levels
B. Group Process Skills	
o Role theory/norm theory	To have similar goals held by all to increase the possibility by reaching goals
o Techniques of structuring discussions	All workers need to serve as leaders in various activities because of need for flexibility
o Cooperative attitude	Fifty people can work together and not just independently
o Leadership	Cooperation proves more productive than competition
	To encourage equal participation
C. Problem-solving Skills	
o Problem identification	To be rational in addressing problems
o Problem solving process steps	To be systematic and comprehensive in addressing problems
o Data collection and analysis	To address the correct issue analysis
	To generate the critical information necessary for solving problems

EXHIBIT 2 - continued

Skill Area	Reason for Need in Business/Industry
D. Decision Making	
o Risk assessment o Data review o Identifying gaps in information o Values o Process models/choice models	If management is pushed to lower levels, decision making goes on at lower levels Organizational philosophy (values) shared with all workers enhances mutual goal development To be aware of information relevant to a decision To understand importance associated with various factors within a decision
E. Planning	
o Goal setting o Establishing measurable o action steps	If management is pushed to lower levels, planning goes on at lower levels If process is right, product will end up "right" Feedback is necessary for continued improvement
F. Communication	
o With individuals o With groups o Presentation skills o Verbal skills o Writing skills o Listening skills	Presentation of own and group's ideas is required for management action Group work rather than individual work is the mode Necessary to listen if want to learn from others
G. Thinking/Reasoning	
o Generate alternatives o Estimate & approximate o Giving & getting meaning o Collecting information o Classifying o Finding patterns o Generalizing o Sequencing & scheduling o Using criteria o Reshaping information o Judging information o Communicating effectively	If all are to contribute, all must think effectively and creatively Decision-making, planning, problem solving all require critical thinking and these skills will be required of all levels of workers, not just management

EXHIBIT 2 - continued

Skill Area	Reason for Need in Business/Industry
II. Organization and Management	All workers share more of the management responsibilities in high involvement companies
A. Business Economics	
o Relationships between costs and income	To act as a team and know how individual effort fits in
o Market standing/ environmental conditions	To enhance ability to change as called for
o Basic economic theory	To encourage productivity through incentives and information sharing
o Reward structure	To reduce waste, duplication
B. Business Operations	
o Relationships between functions/systems	To encourage acting as a whole
o Coordination of resources	To reduce duplication of effort
	To provide feedback, information for correction purposes
	To enhance appropriate assignment of resources as a whole
C. Management	
o Management theory	To exchange information effectively
o Relationships between performance and other factors	To motivate and lead co-workers
	To attain desired performance
o Models of communication	To facilitate workers' quality of daily activities and long-range career goals
o Power/control/authority/ delegation	To improve attendance; reduce turnover, sabotage, grievances
o Human resource development	To attain improved union/management relations
o Feedback/appraisal	To reduce stress
o Job analysis	To tap knowledge of line workers
o Change processes	To improve and change continuously as needed
	To avoid necessity for resolving same problem
	To enhance match between technology, people, and procedures.
	To determine if goals have been met, should be modified, expanded, etc.

EXHIBIT 2 - continued

Skill Area	Reason for Need in Business/Industry
D. Statistical Quality Control	
o Sampling	To improve quality, reduce defects, reduce waste of time and measures
o Quality standards	
o Cause and effect	To identify and analyze problems
o Graphs and charts	To improve productivity, efficiency
o Data analysis	
o Mathematics and statistics	
E. Introduction QWL	
o Definitions of terms and concepts	To enhance understanding of the need for group process and organizational management skills
o Philosophy	
o Role of QWL at various levels in companies	
o Union/nonunion involvement	

SOURCE: Pratzner and Russell 1984a, pp. 25-26.

Interpersonal skills. Interpersonal skills are needed in many facts of organizational life, including group activities. Interpersonal skills are attitudes and attributes of individual behavior. The trait of being self-directed is valued by companies because self-directed workers lose less time waiting for a supervisor to tell them to get started or to switch to a different task.

Similarly, flexibility is valued in employees. Flexible workers can switch between tasks within short periods of time, as needed, and can be retrained for a different job as the company undergoes more fundamental shifts. Along the same lines, the characteristics of being open and curious to learning are especially necessary in companies that use autonomous work groups and where change and improvement are ongoing processes.

Assertive employees are desired by high-involvement companies because they are willing to express their opinions even if they differ from their co-workers' or supervisors' opinions. In this way, all possible suggestions or ideas for improvement may be considered.

The ability to share information or help teach others is also useful for facilitating employee substitutions and avoiding a slowdown in production. The substitution may be impossible unless workers are willing to teach and learn from each other. Sharing techniques for saving time and effort or for doing a more thorough inspection is necessary when striving for a higher quality product or service at less cost.

Increasingly, companies need employees who are willing to accept responsibility for their own work. In the process of sharing decision making and potential input, the need for responsibility throughout the organization grows. If each worker and manager is to ensure the quality of his or her own work, they must be willing to admit when a mistake has been made and do the extra work necessary to correct it, if possible. That is in direct conflict with the "pass-the-buck" philosophy that has become standard in many of the old style companies.

Group process skills. Group process skills enable members of a group to understand the dynamics of small groups and how to work productively within them. Individuals who have knowledge of role theory and norm theory have a better understanding of what group membership means, how group roles may conflict with other roles within the organization, and how to deal with other groups to get things done. Abilities in all these areas mean fewer road blocks to group effectiveness.

Information on techniques of structuring discussions, such as brainstorming, parliamentary procedures, nominal group processes, and conduct of group discussion are all useful to members of task-oriented groups. These techniques help groups stay on target and accomplish their objectives with less waste of time, both of which are mutual goals of the company and the individual. These techniques help groups reach consensus.

A cooperative attitude--the conception that working with others is useful and enjoyable--is necessary to work effectively in high-involvement companies. Company representatives emphasize often that they prefer employees who have a team spirit and

who like to work with others. These representatives feel that schools, as they currently exist, foster individual effort rather than group effort. Company representatives also indicate that most employees adjust quite happily to working in groups, rather than as individual performers, if they are trained and oriented to this way of thinking.

Leadership is an elusive concept, but companies that emphasize maximal use of human resources at all levels try to enhance leadership skills at all levels too. Companies need problem-solving group leaders. They need leaders for ad hoc task forces. They need leaders who provide on-the-job training for co-workers. They need production work group leaders. All of these leaders may work below the supervisory level, so leadership skills should be available throughout an organization.

Problem-solving skills. Problem-solving skills build upon the scientific method. They entail problem identification, cause-and-effect analysis, data collection and analysis, generation of alternatives, selection of solutions, implementation, and evaluation. These are the steps most problem-solving groups or quality circles follow. The skills must be taught, if not in schools, by companies; However, problem solving is needed by all individuals throughout their lives.

Problem identification or definition is a crucial step in the problem-solving process. If the problem or issue is not defined correctly, it will never be solved through this process, no matter how rigorously one follows the remaining steps. Companies operating in a highly competitive world market do not have time to solve the wrong problems. Values and perceptions both affect how a problem is defined, which is why a group perspective may be very useful. Diagnosing a problem through conduct of a cause and effect analysis usually involves fishbone diagramming and use of brainstorming techniques. Again, a group perspective may facilitate a creative yet rational analysis.

Data collection and analysis are tools applicable to many settings. Developing checklists, tabulating frequencies and percentages, and displaying results are used to identify such crucial business factors as defect rates, scrap rates, absenteeism, or inventory levels. The data enable groups to determine if some factor is causing a problem and later, when a change has been made, to see whether the problem has diminished. Thus workers increasingly need research and evaluation skills, at least at a basic level, in many companies.

After analyzing the problem, a quality circle or similar group will (1) generate potential solutions, (2) choose one or more for implementation, and (3) either implement it themselves, if they have the authority or present their analysis and proposal to management for approval. It is management's responsibility to provide feedback, even if the response is negative or indicates that solution implementation must be delayed.

Decision-making skills. The skills involved in making decisions relate to and overlap with those of problem solving. Decision-making skills are needed for all employees because, if management wishes to gain the expertise of the actual production or direct service worker, it must in essence push traditional management tasks to lower and lower levels. Even if final decision-making is retained by management, all levels of employees need to be able to recommend decisions to management.

Decision-making skills entail the ability to assess risk, to review data and identify gaps or conflicting information, to consider the use of process models or choice models, and to understand how values relate to choices.

Assessment of risk involves such activities as estimating probabilities of some occurrence or the possible impact of some intervention within different settings. It involves forecasting cost and time consequences. Of course, workers and managers can usually only assess risk for ventures or changes within their own areas because that is the part of the company about which they have the most information. Further risk assessment may take place at higher levels of management, but workers in high-involvement companies need an awareness of (1) how to make decisions for those areas over which they have authority, (2) how to make decisions for recommendation purposes, and (3) how to understand the logic behind management decisions.

When making a decision, all the data necessary for making a choice may not be readily available, or data that are available may not be reliable indicators of what is being examined. Decision makers must be able to determine if data are adequate for making decisions, or if additional data should be collected, what should be measured. The members of problem-solving teams and ad hoc task forces need skills in examining and using statistical information.

An important factor that is inherent throughout the decision-making or decision-recommending process, but that is often overlooked, is the role of values. Decision makers need to recognize that values shape the perceived desirability of choices. Those companies where worker's goals are the same as management's goals have a greater chance of succeeding, because important values are shared and decisions are made that reflect shared values. Discussion and consensus building around goals and values enhance the development of shared values and an understanding of the roles of values.

There are a number of processes a decision maker may use to make a decision. These processes may be employed by a single decision maker or by groups. However, groups may need to be more explicit about their process if they want to convince others to adopt their decision. Decision makers may want to make use of such techniques as mathematical decision making (e.g., expected value or subjective expected utility formulas), decision trees, venture analysis, or cost-benefit analysis. To employ these techniques, members of problem-solving groups will need training and practice.

Planning skills. Planning overlaps with decision making and problem solving. Planning involves the establishing of goals and developing of measurable objectives and a means to achieve the goals/objectives. It requires "the selection and relating of facts and the making and using of assumptions regarding the future in the visualization and formulation of proposed activities believed necessary to achieve the desired results" (Terry 1968, p. 157). Planning requires a high level of conceptualization skills.

Goal setting requires knowledge of actual and ideal achievement. To be effective, planners must also know how their individual goals mesh with those of the broader work unit, division or department, and overall organization. Goals must then be made operational via action steps of measurable objectives. These must be developed in such a manner as to facilitate evaluation and feedback.

Organizations are usually very goal driven entities, whether the goal is to make a profit, provide a service, or supply a need. Individuals at all levels within work organizations need planning skills so they can assist in meeting their individual and company's goals.

Communication skills. The ability to communicate orally with individuals and groups and in written form is important in any job. The importance is heightened in companies where much is determined in groups and where it is important that agreement with the decision is felt throughout the firm. Another reason why communication skills are critical is that flexibility and constant change for improvement are needed for company survival. Suggestions for change and information on how to change most effectively have to be communicated in some manner. The days of isolated workers and managers toiling in their individual cubbyholes are dwindling. Communication that flows up, down, and sideways in the organization is multiplied in effective companies (Peters and Waterman 1982). Conference and meeting rooms are in abundance. The exchange of ideas and the give-and-take of consensus attainment require excellent communication skills. Workers who previously have worked mainly with their hands will now be making presentations to management on their ideas of how to save the company money. And management will have to learn how to listen. All employees of a company will have to learn how to listen to each other if they wish to be effective.

Thinking and reasoning skills. Most persons are not born knowing how to be logical or creative. But these thinking skills, as well as others, may be critical in all aspects of life; their use is certainly not limited to the work domain. The need for all levels of employees to be thoughtful and logical has increased in the workplace.

Brown (1983) breaks thinking and reasoning into the following categories:

- o Generating alternatives
- o Estimating and approximating
- o Giving and getting meaning
- o Collecting information
- o Classifying
- o Finding patterns
- o Generalizing
- o Sequencing and scheduling
- o Using criteria
- o Reshaping information
- o Judging information
- o Communicating effectively

Many of these categories have been previously mentioned in this section because so many of the skills necessary for working effectively involve thinking--thinking about how to improve the company and the quality of life at work. Skills in thinking and reasoning are desired so that management alone is not responsible for coming up with all the innovative ideas, planning how to implement them, and solving problems and making decisions along the way. Often these activities are shared to a much greater extent.

The consequence is that all levels of employees now need to know more about managing an organization.

Additionally, a kind of learning ability is needed in which the learner has the capacity to create order and meaning out of his or her world. This is different from an emphasis on merely being able to acquire correct information. It seems to include the ability to deal with ambiguity and uncertainty, to deal with and "manage" differences (e.g., in people, values, technologies) and to visualize and make informed judgments about multiple outcomes and realities (i.e., not a linear, "binary," right-wrong approach to judgments and decisions).

Organization and Management Skills

Where workers and managers are to help improve the economic viability of their organization, they need skills and knowledge of business economics and organizational management, which most employees do not have. Most people outside of schools of business and management administration have not been trained in how complex organizations are managed and operated. They therefore do not fully appreciate how their personal efforts may contribute to or diminish the effectiveness, efficiency, and quality of the products or services of their particular work organization.

Traditional skills taught to managers or learned by experience now must be shared with all levels of employees. Management texts for years have discussed business economics, operations, human resource management, and statistical quality control. These subjects must be taught to all levels of workers for companies to function effectively.

Business economics. A knowledge of the costs required to run a business, a typical profit margin, the effect of waste and downtime, the expense of benefits, and the relationship between expenditures and income are crucial for thoughtful involvement in increasing company profit and reducing costs. Employees who do not understand the connections between the price of the product or service their firm markets and the wages and benefits that they receive or the amount of scrap at the end of the day cannot be expected to be very helpful in a program to provide a better product at less cost.

Business operations. Just as workers and managers increasingly need to know about the financial workings of firms, they also need to know how the business operates functionally. This need stems from the basic issue of understanding how all of the individuals and departments are necessary and interlocking components. Employees who know how their efforts fit into the larger scheme are more likely to take pride in and assign meaning to their work. Understanding the coordination of resources, systems, and the relationships between the functions in their company encourages all staff to act as a whole, helps to reduce duplication of effort, and encourages the corrective feedback and information flow between functions--all of which save money, enhance quality, and make work more satisfying.

Management. When all employees are involved in management-type tasks, they need to know what managers need to know: management theory, relationships between performance and other factors, models of communication, and human resource development. They may also need information about such issues as power, control, authority, delegation, job analysis, change processes, feedback, and appraisal.

Statistical quality control. One of the major types of changes in business and industry work design is the shift of responsibility for quality from an "end-of-the line" inspector back to each work unit and each worker. This means that both inspection skills and knowledge of statistical quality control are required. Inspection skills may vary according to the product. Statistical quality control techniques, however, are applicable across many settings.

Statistical quality control involves an understanding of standards and control limits for quality, sampling, measurement and data collection, and the development of control charts. These tasks require basic mathematical skills (e.g., calculating percentages, plotting graphs and charts) and introductory statistics (e.g., computing means and standard deviations).

Quality of work life principles and techniques. If workers and students are to understand the importance of the skills and knowledge mentioned here, they need to understand the shift in the philosophy of work from a scientific management, technological work design to a democratic, sociotechnical philosophy. This should include an awareness of the historical shift in America from the earlier Tayloristic philosophy of work to the philosophy and values that are emerging in the quality of worklife movement and in sociotechnical approaches to work. It should also include awareness of the roles that organized labor has played and its contributions to the evolution of QWL activities. It may also include an understanding of the shift to "open systems" and "ecological" perspectives of work, in which the welfare of systems is seen in terms of the quality of the interconnections of the parts, as opposed to an earlier, more atomistic and mechanistic world view (Wirth 1983). Students should also appreciate the critical distinctions between the philosophy, values, and models of QWL developments, and the methods and techniques by which these values and beliefs are implemented in the workplace (e.g., quality circles, autonomous work groups, gainsharing plans, labor-management collaborations, and so forth).

IMPLEMENTATION STRATEGIES

As a vocational program administrator, leadership responsibility for implementing the teaching of transferable skills reside with you. You will, of course, need to enlist the enthusiastic support of your vocational staff in bringing about the necessary changes. Careful cooperative planning will also be needed to select the most effective implementation strategy or strategies for your school or college.

With the brief discussion of examples of major components of transferable skills as a background, let us turn briefly to a consideration of several key characteristics and concerns of programs or approaches for teaching transferable skills. Four broad approaches are discussed. *Infusion* of transferable skills into existing and ongoing classroom and laboratory experiences is presented as an immediate and practical way to begin developing such skills. The *application* and use of transferable skills and knowledge under as wide a variety of conditions and circumstances as possible is discussed as leading to mastery and to the transfer of skills to various and novel situations. Vocational and practical arts programs have a special responsibility here because they provide unparalleled opportunities among school subjects for hands-on approaches and for extensive practical applications and practice. Emphasis is given to the need to greatly increase the use of *cooperative learning procedures* to promote relevance and higher student achievement of important transferable skills. And we conclude with a brief discussion of the potential value of an *integrative, multi-disciplinary* approach to curriculum; one which attempts to focus on the connections and shared content among school subjects rather than their differences and uniquenesses.

Infusion

Development of the component skills and knowledge in the broad areas already noted is seldom an explicit part of a vocational education program. Their development rarely receives the amount of emphasis, relative to specific job skills, that their increasing importance in business and industry warrants.

Development of these skills does not fall conveniently into any one program or service area of the school. It is a total school responsibility, not just the concern of the elementary school or of a single discipline area within the school. The risk here is that the combination of the broader definition and derivation of these skills with the compartmentalization and disciplinary base of education--especially secondary-level education--could easily mean that the development of these skills is not seen as anyone's explicit responsibility. Thus, there is a pressing need at the elementary and secondary school levels to (1) identify better the specific skills that various school programs and levels are attempting to develop, (2) uncover commonalities among programs and levels (i.e., look for the things they have in common, not their differences), and (3) develop improved policies and approaches to better ensure development of critical skills. Again, strong administrative leadership and support are essential to a successful effort.

This is *not* to say that development of these skills is the sole responsibility of vocational education, or that vocational education totally ignores such skills. Curriculum guides and instructional materials are available for some of these skill

areas (e.g., problem-solving and communication skills). Development of other transferable skills frequently is the focus of such experiences and programs as Junior Achievement (e.g., business economics and organizational management) and of vocational student clubs such as the Vocational Industrial Clubs of America (VICA), the Distributive Education Clubs of America (DECA), and the Future Farmers of America (FFA) (e.g., group process and interpersonal skills). Nevertheless, these programs and materials are scattered and are usually peripheral to or ancillary aspects of the formal school curricula; seldom are they integrated into and emphasized in regular vocational programs.

One immediate and practical way to begin to develop transferable skills is through the deliberate and planned *infusion* of these skills into existing practical arts and vocational education courses. Transferable skills can be infused or integrated into ongoing classroom and laboratory experiences without eliminating what is presently being taught and substituting new things. Instead, a particular activity, project, or task used to accomplish some specific purpose or objective can be used, at the same time, to accomplish additional goals or purposes. Thus, the development of transferable skills can complement the teaching of specialized occupational knowledge and skills.

To incorporate transferable skills effectively within existing programs and settings, administrators and teachers must be willing to rethink and reconceptualize what is presently being taught--how and why it's being done--and to refocus on instructional objectives, teaching strategies, and student learning activities in order to make a deliberate and careful identification of explicit opportunities to introduce or to practice and develop these broadly applicable, nontechnical skills. Students should be provided with as wide a range of opportunities as possible to apply these skills. The more opportunities given to students to practice them and the more realistic the opportunities are, the more likely that teaching will be effective.

Although vocational and practical arts education have a shared responsibility with other school programs to contribute to the development of these skills, they are unique among educational programs in their potential for so doing. This is because they provide unparalleled opportunities for hands-on approaches and for extensive application and practice. Unfortunately, this potential can be easily overlooked in the day-to-day routine of teaching and learning.

Application

Another critically important concept in any approach for teaching transferable skills is that of the application of skills and knowledge of the transfer of learning process.

If it is correct that major trends and reforms in education reemerge every 10 to 12 years in cycles, then it is almost certain that within the next decade the outcry for reform will center on the need for "useful" skills and knowledge. The public, and especially employers, will be upset and will lament the fact that, although kids leaving school are bright and they seem to know a lot of things, they can't *do* anything. The cry will be Why can't the schools give us students who can apply their knowledge and skills to the real world, everyday needs and uses?

Clearly, today's obsession with students acquiring abstract skills to become what Arthur Wirth has described as a generation of "test-takers and right-answer-givers" is too narrow a purpose for public education. We need a broader purpose and innovative programs to help all students learn how the increasingly abstract knowledge and skills they are acquiring in academic classrooms can be *integrated* and put into *practical use* in the real world. The need is for the meaningful integration of skills and their practical applications and uses.

Higher order transferable skills such as problem solving, critical thinking, and decision making do not appear to be simply extensions of a list of basic skills. Rather, higher order skills seem themselves to be different integrations and combinations of more abstract basic skills into larger, meaningful behaviors and applications.

Basic Skills	**Higher Order Skills**
o *Dis*-integrated	o Integrated
o Abstract	o Applied
o Purposeless	o Purposeful

Thus, by focusing on the development of higher order skills through the purposeful integration, application, and use of these skills, vocational education might, at the same time, meet its expectations to enhance and reinforce basic skills. It would not merely repeat learning that should be taking place in the academic program, but could provide a realistic alternative approach to learning.

Vocational education can and must play a key role in meeting this need. Vocational education must be both a "process" and a "program." It must aim at reinforcing development of basic and higher order transferable skills and at developing the application and use of skills in practical settings for practical purposes.

What is the transfer process? In simple terms, to transfer something--a skill or bit of knowledge--is to take what was learned in one setting and apply it to another setting. It means, for example, applying writing and listening skills developed in the classroom to the job hunting tasks of writing for information about a position and listening to a supervisor's description of what duties and responsibilities the position entails. You, as an administrator, probably have been concerned at various times with whether your students really understood the things they were being taught--whether they understood those things well enough to use or apply them in situations outside the classroom. Your concern about application is what transfer is all about. There are several assumptions underlying the concept of transfer. The first is that something has been learned and retained in memory. The second assumption is that what was learned (i.e., knowledge and/or skills) is transferable. And finally, there must be opportunities to apply elsewhere what was learned. Recognition and application of the transfer process can take place in the classroom. Teaching for transfer is of paramount importance.

The similarity between transfer situations. We believe that broadly applicable, transferable skills are abstract skills taught both through lecture and listening, and the assumption that vocational education can do little to develop them, are both false assumptions. There is no basis for the belief that such transferable skills as problem solving, decision making, or interpersonal skills are learned best through lecturing. In fact, the preponderance of learning theory and practical experience suggests that

abstracting the general processes or procedures involved in these skills and lecturing about them is probably the *least* effective means for their development. Instead, students must be provided with a wide range of opportunities to apply and practice these kinds of skills. The greater the range and realism of these opportunities, the more effective the practice and the greater the likelihood of sustained interest and transfer by learners.

We need to make the situations discussed and the activities conducted in the classroom as similar as possible to those that students encounter outside it. This will help to bridge the gap between the familiar and the unfamiliar, allowing students to generalize what they have learned in the familiar environment of the classroom and apply it to less familiar settings outside the classroom. This means that in vocational courses, the classroom should be as much like the work environment as possible. For example, the business class should resemble an office and the auto shop should be set up like a garage. Actual activities would differ from class to class depending on the ages of the students, their backgrounds and interests. The important point is that students must recognize the relevance of classroom learning to many life and occupational roles.

Identifying important parts of a task. As your teachers proceed through various activities to encourage transfer, it is important that the students recognize the application of knowledge or a skill previously learned in the classroom. Pointing out or identifying the important features of a task helps the student recognize those operations or skills that appear over and over again in other situations. By identifying important features of a task, the teacher is, in effect, reinforcing that recognition.

When participating in various activities to encourage transfer, teachers should point out the similarity between the present application of a skill and its application in the original learning situation. Make certain students recognize that they have applied something they learned--that this is likely to occur in other situations and thus that the skill or knowledge is important.

Teachers can ask their students why the activity they have just completed is important. Your teachers should guide their thinking so that they realize on their own the importance of classroom learning to their experiences outside the classroom. Teachers can even ask their students to suggest other applications and other activities for practicing skill transfer. We need to encourage *them* to generate enthusiasm for applying what they have learned. Since activities for problem solving lend themselves to groups as well as individual activities, students can participate as teams in various community settings or become involved in individual assignments.

Plenty of practice. Students cannot transfer what they have not learned. Thus it is important to teach for mastery. In any subject, initial learning standards should be set within the achievement capability of each student. As students succeed, the standard may be raised to a higher level to encourage continuous improvement.

It is helpful to provide guidance during the mastery period so that what is learned is learned correctly. This involves prompting students, correcting misapplications and mistakes, and providing positive reinforcement for improved performance. In order to encourage transfer, it is recommended that students be given guidance in practicing the same skill in a variety of performance situations. For example, writing skills are required in most school subjects. Students preparing book reports, themes, and other

written assignments should receive guidance in the quality as well as the substance of their assignments from teachers of history, social studies, vocational subjects, and other classes where writing style is not usually taught. Students may also need assistance in writing letters to friends, classified ads for newspapers, and letters of application for jobs.

Practice in the form of repetition and drill may be useful during initial stages of learning; however, it is important to keep in mind that repetition and drill will also encourage a fixed response or learning set. To discourage this from happening, techniques should be used that prevent students from using concepts and skills mechanically. To use logic but to use it flexibly, incorporate exercises that force them to adopt new points of view. This may be accomplished by introducing disturbing data, permitting students to make mistakes, and switching the subject matter so that students will have to change a point of view that they had taken just previously. Also, as mentioned earlier, practice can be diversified by requiring different kinds of thinking and different formats (categorization, matching and labeling, multiple choice, puzzles, and so forth).

The higher order transferable skills and knowledge increasingly required by work in technologically advanced and participative workplaces fall within the five new basics outlined by the National Commission on Excellence (1983). As emphasized by the National Commission, their development requires "application" and practice. For example, such skills as working effectively in groups, problem solving, and decision making are not developed effectively in the abstract through lecture, discussion, drill, or rote learning (the factory model of education). They are best learned through realistic hands-on experience and practical application, which is the kind of teaching and learning that has characterized vocational education since its introduction into the public schools. Thus, vocational education is in a unique position to enhance quality and excellence in education through its instructional approach.

Thus, it seems highly desirable that schools provide learners with opportunities to practice the application and use of skills and knowledge under as wide a variety of conditions and circumstances as possible so that the potential for transfer and wider use of those skills in various and novel situations is increased. It also seems desirable as well to inform learners that skills developed to levels of mastery potentially are broadly applicable skills. Learners should then be provided with a range of examples or instances in which the skills they are developing could be applied. In so doing, they should be informed of the skills they have acquired and their level of proficiency in those skills; they should also be informed of skills not acquired or not developed to higher levels of proficiency that represent remaining developmental needs. These remaining needs can serve as personal objectives for the continuous learning of the individual.

Cooperation

A great many technological and workplace innovations hinge on greater cooperation and involvement of workers both in management and production. Further, we know that for a wide range of school subjects and tasks and for all age groups, cooperation is superior to interpersonal competition and individualistic efforts in promoting achievement and productivity" (Johnson et al. 1981, p. 56). Given the growth of high-involvement, cooperative work settings, the heavy reliance of much of education on

interpersonal competition and individualistic work, and our current dissatisfaction with school achievement, we need to seriously consider increasing the use of cooperative learning procedures to promote relevance and higher student achievement.

Group activities are especially important because they *require* development and application of such skills as planning, group problem solving, decision making, and interpersonal skills. To be most effective, group activities should first be designed explicitly to improve development of these skills, as well as technical job skills. Second, this objective should be communicated to students.

Cooperative learning procedures and group learning techniques can be used also to supplement individualized instructor assistance. They can provide timely help to students to overcome barriers or impediments to learning which, if ignored and allowed to accumulate, could lead to frustration, boredom, and eventually to failure and dropping out.

Integration

Ultimately, and perhaps ideally, the curriculum perspectives presented here would seem to require an *integrative, multidisciplinary* curriculum and a holistic approach to the delivery of instruction. Such an approach that pulls together various subjects, disciplines, and perspectives does not now exist in the schools (Pratzner 1987, 1985).

Needed are broad unifying themes that compel teachers and learners in different disciplines to search for and focus on collaboratively the knowledge, issues, and understandings their disciplines all share in common, rather than to emphasize only the differences and uniquenesses of their separate subject areas. It seems especially important that we begin to identify *connections* among science, social studies, (especially economics and civics), and vocational and practical arts subjects because so little currently exists in these areas. Also, it seems important to identify the relationships of the knowledge and skills developed in these several disciplinary areas to the engineering, human resource development, and organization and management functions of the workplace.

Team teaching and an applied, hands-on instructional approach would seem to be helpful to further facilitate achievement of the desired connections and integration of extant subject matters. Moreover, traditional, compartmentalized vocational service areas (i.e., trade and industry, agriculture, home economics, business and office, and marketing programs), each focused on specialized job skill development, do not appear to be well suited to this integrative approach. A comprehensive, integrated core program of vocational education would seem to be needed to focus on the development of basic skills and the sophisticated skills, judgments, and initiatives noted earlier as required by more competitive, highly technical and flexible workplaces.

Barriers to Effective Implementation

Whatever implementation strategies may be used, there appear to be a number of barriers that must be overcome for the effective development of transferable skills in vocational programs. Three such barriers are particularly troublesome: (1) lost opportunities, (2) implicit goals/uninformed participants, and (3) going it alone.

Lost Opportunities

Experience has shown that, although vocational programs offer frequent and widely varied opportunities for enhancing and reinforcing students' transferable skills, far too many of these opportunities are lost or never recognized. Vocational administrators and teachers need to better recognize and capitalize fully on the available opportunities. They need to review course syllabi, instructional materials, and teaching approaches deliberately and routinely to identify systematically already existing opportunities for teaching transferable skills. They should also consider new opportunities that may be created. For example, the process used to screen, estimate work/costs, and accept faculty and student cars for repairs in an automotive repair program, or school clerical and typing assignments in a business education program, can provide excellent opportunities to practice a range of transferable skills such as interpersonal skills, listening skills, estimating and computation skills, and problem-solving/troubleshooting skills.

Thus, over time, every activity undertaken in the vocational program should be carefully scrutinized and analyzed to identify the full range of skills needed for its completion, not just the technical skills. Over time, vocational administrators and supervisors should help their teachers to become adept at routinely spotting available opportunities for practicing and improving a variety of transferable skills.

Implicit Goals/Uninformed Participants

It isn't enough just to recognize and identify opportunities for the development of transferable skills. If the development of transferable skills isn't an explicit goal of the program and communicated effectively by vocational administrators to teachers, students, academic school administrators, policymakers, and others, much of the value of vocational programs may be overlooked. Vocational teachers need to create mechanisms and approaches for systematically informing students of the full range of skills they are developing in their vocational programs--not just the specialized job skills. And you as an administrator, need to ensure that your teachers are fully informed about the rich opportunities and varied skill development that can be an integral part of their vocational programs.

Going it Alone

Identifying opportunities for practicing and improving transferable skills and making the development of transferable skills an explicit goal of instruction can be difficult if done by the teacher alone or done on a one-time-only basis. Vocational administrators need to fulfill a leadership role here. Working with others in the same school--vocational teachers, academic teachers, other administrators, and business and industry representatives in both the planning for and implementation of transferable skills has the potential double impact of not only making the identification of tasks easier and more effective, but of making key actors more aware and supportive of the broader purposes and full potential of the vocational program. The team approach is an effective one not only for the analysis of the vocational program, but it can be useful for academic programs as well to identify additional opportunities for the practical application and practice of transferable skills within the context of the academic

program and to identify opportunities for coordination and collaboration between academic and vocational programs aimed at common skill development objectives.

SUMMARY

Administrators must play an essential facilitative and leadership role in the implementation and development of transferable skills. It is the administrator who must provide the original initiative and conceptual leadership needed for the development of transferable skills. This will require a thorough understanding of the nature of transferable skills, the processes of skill transfer, and the instructional practices and approaches for developing transferable skills.

In the role of facilitator, the administrator must seek out and acquire new materials, ideas, and other resources for the development of transferable skills. To ensure that these resources and ideas get into the hands and thinking of key instructional staff will also require the commitment and expertise of the administrator.

The administrator is in the key position to create the necessary team attitude and approach to the identification of opportunities for the development of transferable skills. The team approach, involving coordination and collaboration among teachers from throughout the school, must be initiated and guided by the administrator. It requires the administrator to provide leadership in the groups' rethinking and reconceptualizing what and how subjects are being taught and to refocus the groups' thinking on common skill development objectives. Finally, the administrator must guide and facilitate the teams' efforts to identify explicit opportunities for the development of transferable skills and to create instructional objectives, teaching strategies, and student learning activities designed for their development.

EXAMPLES OF ACTIVITIES TO DEVELOP TRANSFERABLE SKILLS

To assist you in identifying and selecting activities to develop transferable skills in the area that you teach, refer to the following examples in this section.

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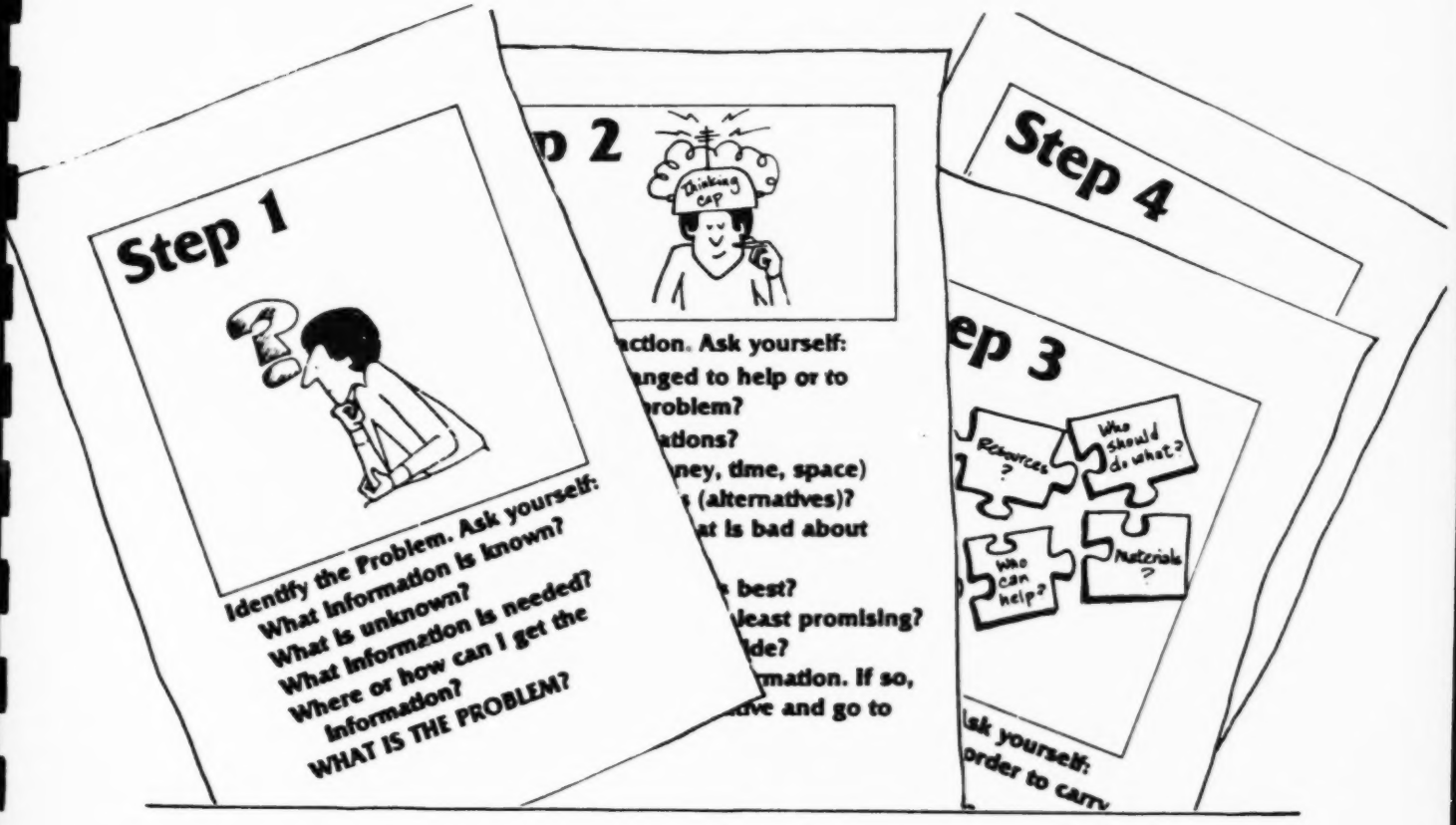
SOURCE: This section is adopted from R.E. Abram, R. Covert, and K. Kitchen, *Teacher's Guide to Transferable Skills.* (Columbus, Ohio, 1981), The National Center for Research in Vocational Education, The Ohio State University,

Problem Solving

The scientific method delineates a four step process for solving problems:

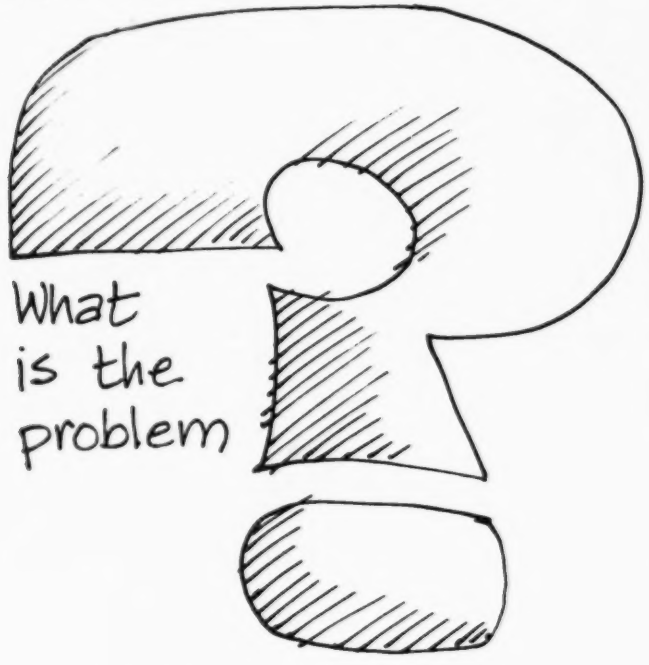
- identify the problem
- devise plans to overcome the problem and select the most feasible
- carry out the plan
- evaluate the plan

These four steps must first be learned and then practiced to ensure mastery. It is recommended that the steps first be practiced sequentially before the overall process can be applied to any problem. Transparency masters for student information are provided at the end of the problem-solving section in this guide (pp 49-57).



The Process

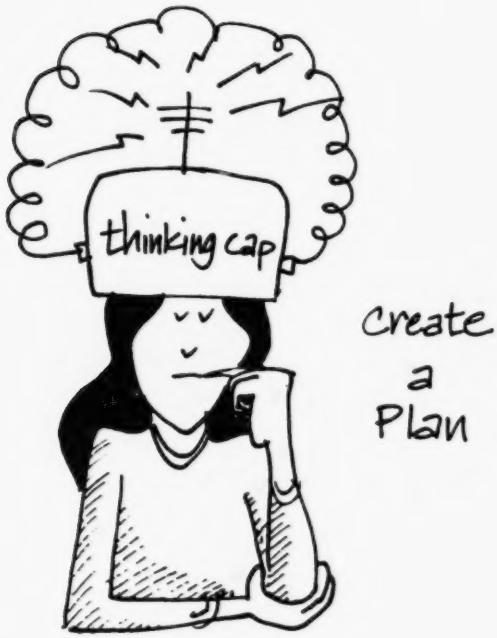
This section presents a four-step process for developing problem-solving skills. Also included are suggestions for identifying real-life problem situations. After reading through each step, select a problem situation from the list of suggestions that follow and have students practice each of the steps. Additional topics for practice are provided in six areas of potential interest to students. Students should be encouraged to identify the problems they wish to explore from experiences in their own lives. The list of topics can serve to stimulate their thinking about certain problem areas in which they may have had experiences.



Step 1. Identify the Problem

This step involves identifying the problem by asking and answering questions:

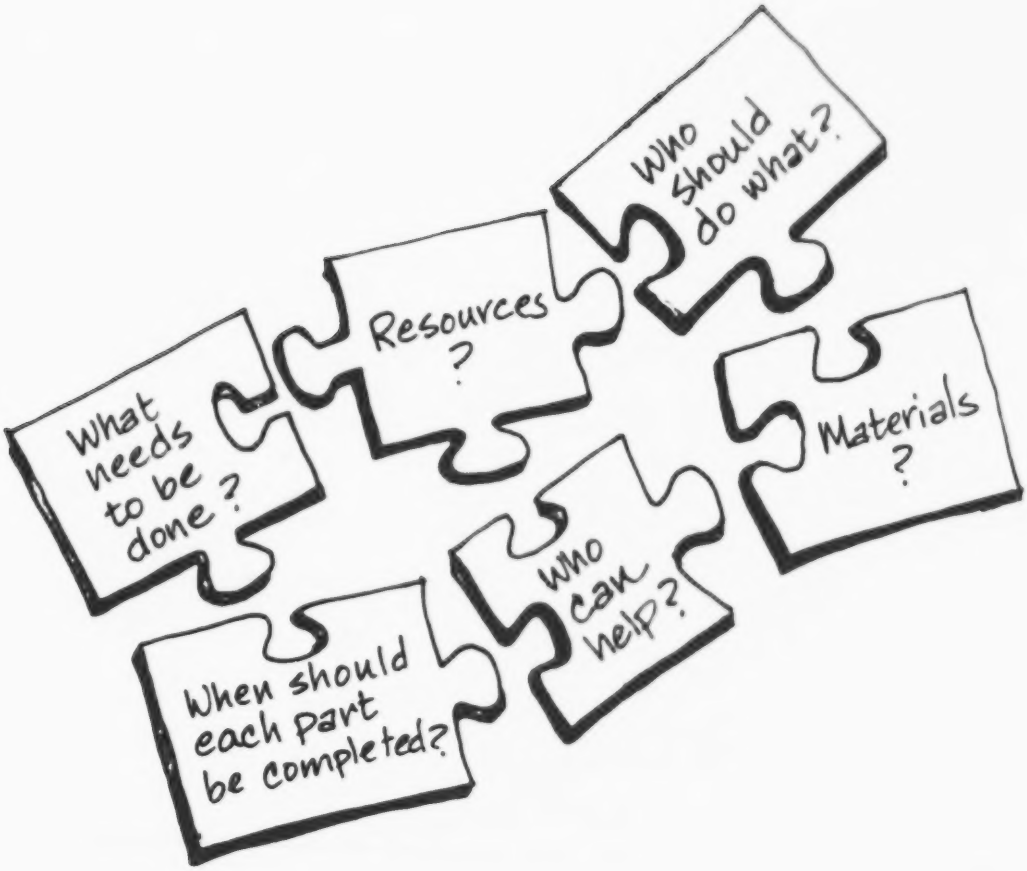
- What information is known?
- What information is unknown?
- What information is needed?
- Where can the information be obtained?
- How can the information be extracted?
- What *is* the problem?



Step 2. Devise a Plan of Action

This step involves preparing a method of approaching a solution by asking and answering these questions:

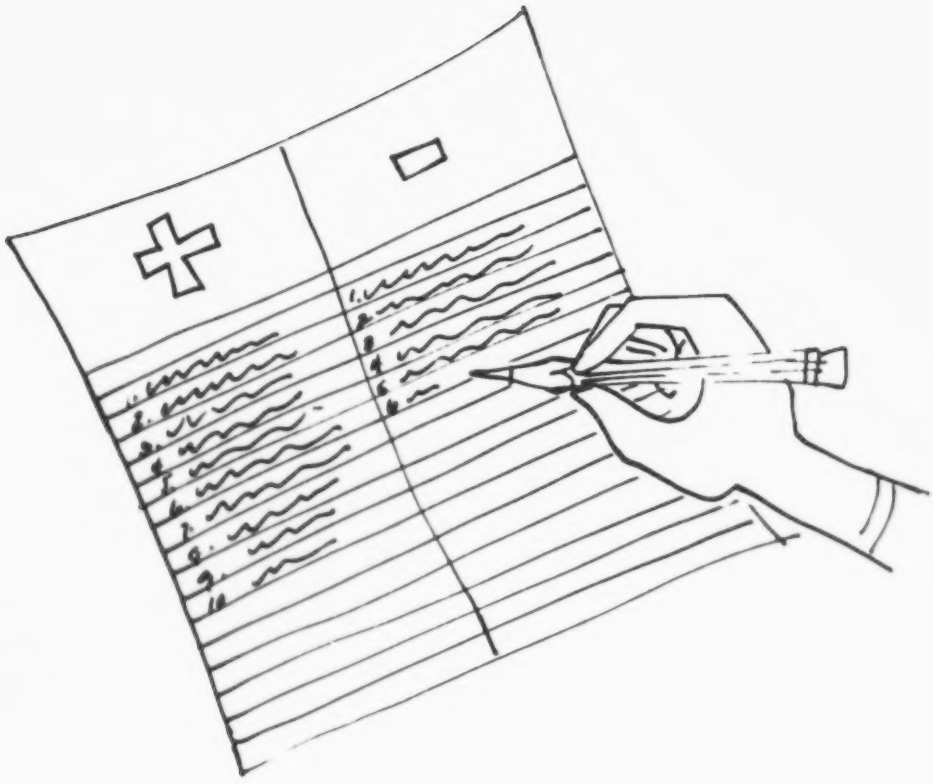
- What, if any, changes can be made which will alleviate or eliminate the problem?
- What limitations (economy, time, space, resources, etc.) accompany the alternatives?
- What are the potential advantages and disadvantages of each alternative?
- Which seem to be most promising? Least promising?
- Is there sufficient information on which to make a decision? If not, gather additional data. If so, select the most promising alternative.



Step 3. Carry Out the Plan

This step involves putting into practice the decisions made in the preceding step. Answer these questions:

- What resources are needed?
- How will responsibilities be delegated?
- When will each step of the plan be completed?



Step 4. Evaluate the Plan

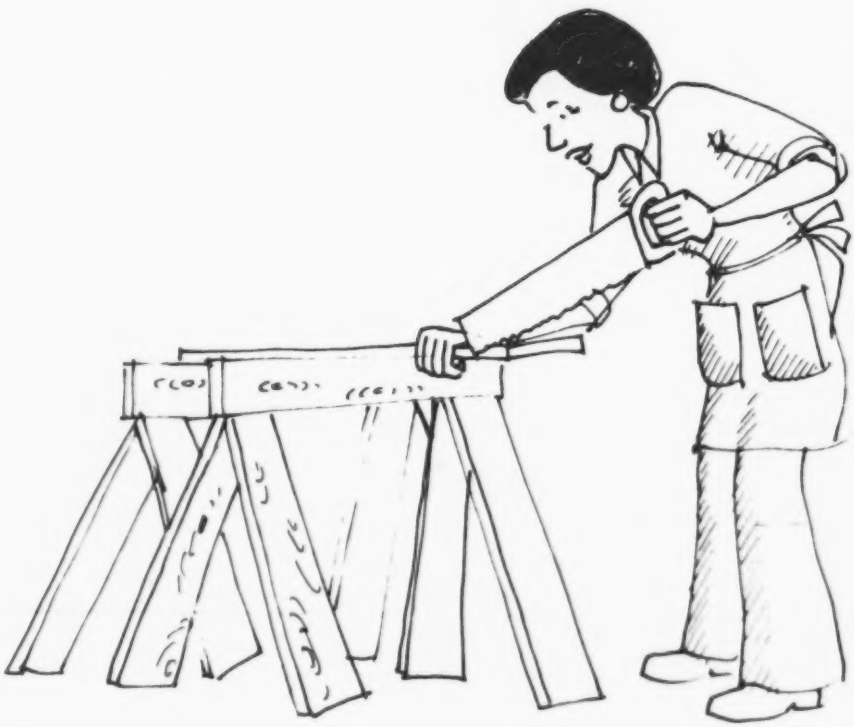
The effectiveness of the plan can be evaluated by answering these questions:

- How will effectiveness (or success) be recognized? What changes are desired?
- Is the result acceptable? Is more improvement desired?
- Should the present plan be continued?
- Should steps 2-4 be repeated because of new information generated from carrying out the plan in step 3?

An Example of Problem Solving

Here is an example to share with your class of how one student used the problem-solving process.

Susan is a senior in high school. She has decided that she could use extra spending money this year and would like to have some work experience before graduating. This is how she considered her problem of locating a part-time job.



Step 1. Identify the Problem

1. She has the time and her parents' permission for getting a part-time job through the school's cooperative education program.

2. She enjoys working outdoors and spent last summer as a junior camp counselor learning beginning carpentry techniques.

3. Susan found out from that job that she likes working at building things and following written/drawn directions.

Susan does not know:

1. What jobs are available.

2. What pay she can expect to receive for the kind of job she wants.

3. How to find out about what kind of jobs are available in the area.

Susan already is aware of some resources:

1. She can talk to her parents and friends to find out what they know about jobs.

2. She can read newspaper ads and listen to a local radio program of job openings.

3. There is a cooperative education teacher and a guidance counselor at school with whom she can discuss questions.

Susan will need to develop a plan to get her questions answered and to gain access to the available resources (and any other resources she finds through the ones she already knows about) in order to get closer to her goal of finding a part-time job.

Step 2. Devise a Plan of Action

Susan wants to get more job experience and earn extra spending money. Right now she is babysitting on weekends, but because she has been doing that for the past year, she'd like to try something different. She would also like to find a part-time job that is more educational and pays better.

Susan could wait until graduation to try to find a job or go to college and wait until then to get job experience. But Susan has decided that getting a job now through the school's cooperative education program will give her valuable experience for later full-time jobs.

Susan could do volunteer work as she did last summer, and this could help her gain experience. Susan would rather enroll in cooperative education and find a job that gives her experience and pay if she can.

Susan has thought over these alternatives and talked about them with her parents. They agree that these are alternative plans if Susan cannot find the part-time job she wants, but have encouraged her to continue working on her plan of finding a job where she can learn some new career skills while earning school credit and a salary.

Step 3. Carry Out the Plan

Susan is carrying out her plan of trying to find a job that will provide her with the experience of learning new job skills and earning extra money. She is checking out the resources she already knew about and some new ones she has discovered.

1. Susan has asked her parents and friends if they know of any jobs that might be available. She also talked with her school's co-op program teacher-coordinator. Based on her last summer's work experience, the teacher-coordinator offered to write a reference letter for Susan to give to a prospective employer, telling about how hard Susan worked last summer, about how she took on responsibility and did a good job. He will also list the carpentry skills that Susan learned at camp.

   Susan didn't know what a reference letter was and realizes that this is a good way to let others know what she can do.

2. She has been reading newspaper ads, but has turned up only jobs that require full-time positions. Susan is discouraged for a few days, then remembers that she can talk to her teacher-coordinator.

   Susan makes an appointment with her co-op teacher, Mr. Brown. Susan explains to him that she enjoyed learning beginning carpentry skills and that her camp counselor said that she was a fast learner. She would like to find a part-time job where she could learn more about carpentry. Susan thinks that she might find out more about carpentry as a career for her. Mr. Brown agrees with Susan that this is a good way to find out more about a career in carpentry and tells Susan that he keeps a notebook of employers who hire high school students.

Susan reads through this notebook. She finds a small contracting company listed and, with Mr. Brown's encouragement, she calls to make an appointment. Susan takes the reference letter from her teacher-coordinator to the interview and talks with a carpenter who works for the contracting company. He is impressed with the work she has done in looking for a job and with the carpentry skills she acquired last summer. Mr. Schulz, the carpenter, is willing to hire her for 20 hours a week on a trial basis. She'll be working and learning while on the job.

Step 4. Evaluate the Plan

Susan decides that her plan for finding a job was an effective one because she was actually able to get a job doing what she wants to do. She was also able to enroll in related carpentry courses at her high school. Her co-op teacher also helped her develop a training plan so as to assure her receiving a wide range of job experiences.

Because Mr. Schulz will be teaching Susan carpentry skills at work, at first she will be earning about as much as she did babysitting. But there is potential for earning more money after she has gained some experience in this job. This is an improvement Susan hopes for in the future. Susan is excited about her new job and pleased that her plan for finding a part-time job was successful.

Problem Solving

Activities

For each problem situation you select, apply Step 1 and answer each question. Repeat for Steps 2-4.

1. Interview school staff members from various departments (food service, transportation, administration) to learn what problems they have in their departments.

2. Ask students to reflect on their work experiences and identify problems they have had and solved.

3. Have students identify employment problems of current community interest.

4. Ask students to suggest topics which may become problems in the community, country, or world.

Interpersonal

Research has indicated that a lack of positive attitudes and interpersonal skills accounts for more job loss than does the lack of more technical or job-specific skills. Many organizations are now providing extensive educational programs in this area for adults. It is important that the students in your class be exposed to some work situations where good interpersonal skills are required.

Sensitivity to Others

Activities

1. Students pair off and write three questions about their partners. Partners can respond orally or in writing.

   The class can discuss these areas:

   - o Types of questions (e.g., actual, personal, etc.) asked or not asked
   - o Factors that influenced decisions concerning what to ask
   - o Satisfaction regarding partner's response (e.g., too brief, evasive, etc.)
   - o New information discovered about the person
   - o Other ways besides direct questioning that could be used to find out about the person

2. Follow up with a repeat of this activity (with same pairs) several weeks later. Discuss new information found, difference in questions asked.

3. Discuss job situations, and appropriate ways to learn about co-workers (e.g., questions, observation, empathizing, etc.).

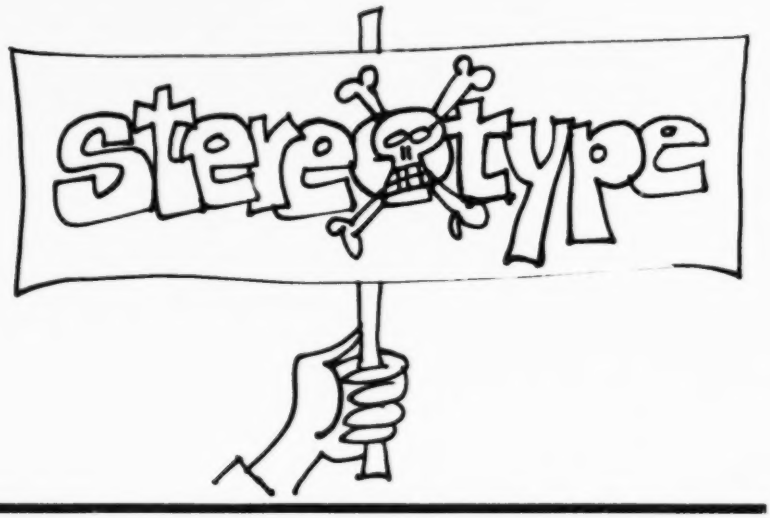
Variations

A. Students list three questions about a media personality or politician, and discuss ways to get responses (e.g., letters, reading about the person, etc.).

B. Ask students to list three questions and responses about themselves that they feel reveal important information about themselves.

C. Students list five other clues or signals they send out that let others know more about them.

D. Students discuss ways of getting to know someone (e.g., introduction, casual friend, etc.). Relate to types of situations such as relationships with a family, club, job, etc.



Evaluation of Others

Activities

1. Give groups of students a list of 10 stereotypes and brief descriptions of each. (Examples: the athletic "jock," the teacher's pet, the campus queen, the cheater, the average John Doe, the workaholic, the gossip, etc.).

2. Ask each group to decide on the three least appealing or most objectionable types and state the reasons.

3. Ask the class to compare each group's choices and discuss the reasons. Discuss what possible circumstances cause people to behave as these types--family problems, low self-esteem, sudden move to new area, etc. Also discuss positive attributes each type can have.

4. Relate these types of adults to persons whom students may know (e.g., neighbor is the gossip, man who files false tax return is cheater).

5. Point out personality types on jobs. Discuss why people behave as they do as well as positive personality traits each type might possess.

6. Discuss the problems created by stereotyping and by making assumptions based on stereotyped images of others.

Variations

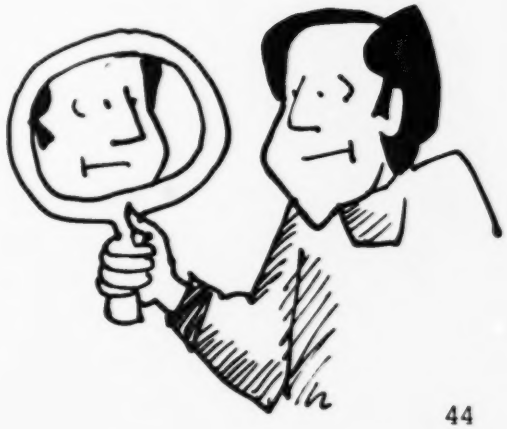
A. Give groups of students a hypothetical situation and ask them to describe how each type of personality would respond. Situations can begin with school settings and expand to community and job situations.

   Some examples of such situations are:

   - o student requests change of course schedule from administrator.
   - o several partially sighted students have been placed in the class and students are asked to assist them.
   - o a student has been working in a fast food restaurant for several months and would like to apply for a promotion. The supervisor is looking for someone older and with more experience.

B. Ask students to pair off and list personality traits for themselves and their partner. Pairs can discuss lists and make changes. Point out how others see us and why. Point out how people all hide some of their true personality traits.

C. Students list clues to personality that employers may "read" in us. Also, reverse the role; list clues employees see in bosses. Discuss possible problems in work situations due to misconceptions of the personality of co-workers.



Group Process

Activities

1. Give description of fifteen people on a sinking ship. Use descriptions such as young, old, men, women, children, single, married, handicapped, etc. The life raft will accommodate only five people.

2. Students must individually select the survivors in three minutes.

3. Students should form groups of eight to ten and select a group leader.

4. In the groups, students repeat the selection process, reaching agreement in ten minutes.

5. A predetermined observer will record and report the group members' and leaders' behavior in reaching a decision (e.g., democratic, autocratic). The observer will not communicate nor participate in the activity.

6. Discuss the difficulty in reaching group decision versus the ease in making individual decisions.

7. Using information collected by the observer, compare the process of groups in terms of expediency and human relations.

8. Identify factors which facilitate or inhibit group decision making and factors which alienate some people.

9. Relate the activity to job, school, community, family, and government decision making.

Attitudes and Self-Concept

Activities

1. Challenge students to see the effect of a positive self-image in students around them. As part of class assignment, instruct students to select someone younger (in or out of school) about whom they feel positive.

2. Students offer positive feedback to the younger person at each opportunity and observe reaction in terms of motivation, effort, output (duration--one week).

3. Students discuss in class the power of positive reinforcement in production, attitude, and self-esteem.

Variations

A. Use a role playing exercise in which the supervisor and supervisee show the effect upon production of a worker when positive feedback is given.

B. Discuss methods supervisors may use to deal directly with extremely negative behavior.

Computation

Basic computation skills are useful in a wide variety of settings outside the classroom. As consumers and often as workers, people are required to make practical use of basic arithmetical operations. Research evidence indicates that math skills learned in courses through first-year algebra are transferable across many occupational situations. Keeping records, handling money, purchasing food, clothing, and other consumer activities are but a few examples where application of basic computation skills is important.

Loans

Activities

1. Students bring automobile advertisements to class.
2. Each student selects a car and fills out a sample loan application form.
3. Instructor "awards" loans to each student and the students must compute the principal and interest of the loan.

Variations

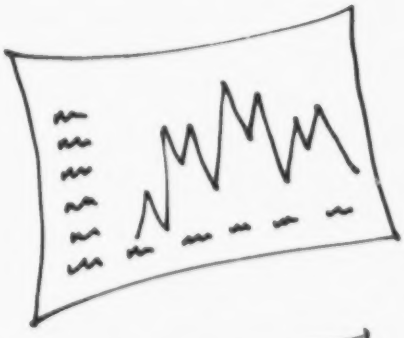
A. Groups compare and discuss the best loan situation.

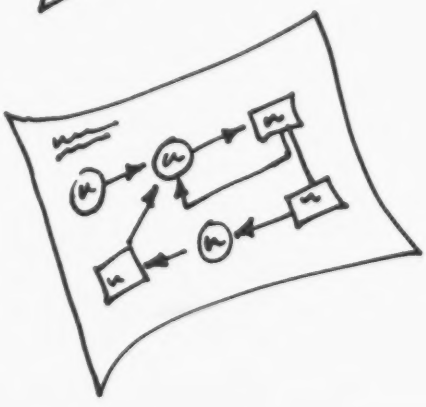
B. Students make "payments" over several months and compare the principal and interest each "paid" after that time.

C. Students choose homes, appliances, etc. to become aware of various loan procedures and pitfalls.

D. Students attempt to include a new loan within the budget prepared in the money management activity (see page 68).

Analyzing and Synthesizing





Activities

1. Using the school as a source of data collection, students extract data from tables and charts and also present information in table, graph, and chart form in the various class assignments.

   The following sources may be used for data:

   - Athletic department--wins, losses, ERA's, batting average, field goal, shooting percentages, yardage gained, etc.
   - Library book circulation data,
   - Cafeteria meals served, costs, etc.
   - Numbers of new students, withdrawals, absences, suspensions, numbers of honor students, number of failures, etc.
   - Custodial costs, time breakdowns, etc.
   - Business office--salaries of professional staff, utility costs, energy costs and savings, student demographic information.

Variations

A. Students develop charts, graphs, etc. to reflect their personal expenditure of time, money, etc.

B. Students develop circle graphs for individual athletes to show total breakdown of performance (e.g., total at bats versus singles, doubles, triples, ground outs, strike outs, fly outs, reaches on error, etc.).

C. Using copies of payroll deductions, students present information in graph, table, or chart form which shows proportion of salary withheld for each purpose.

D. Using newspapers, resources at library, etc., students extract information from available charts and graphs.

Estimations and Judgements

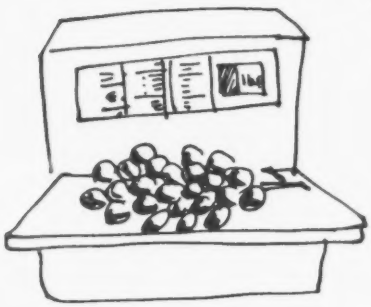
Activities

1. Students bring advertisements and catalogs to class with prices covered.

2. Teacher allows each student (or small group) an amount of money to spend.

3. Students list items and estimated prices and then compare the list to actual prices.

4. Discuss the real value of a wide variety of products and services, emphasizing consumer spending practices.



Variations

A. Instead of consumer items, students can use weights, measurements of area, etc. List items with size covered. Give students a total size and ask them to list items which add up to the total.

B. Use unit-pricing practice to teach students how to get the most for their money.

C. Discuss advertisement gimmicks to point out pitfalls and problems.

Money Management

Activities

1. Students list their own income (job, allowance, etc.) and their expenses.

2. Students discuss the following:

   - Where their money goes
   - How to increase income
   - Seasonal or unexpected expenses
   - Savings--need for, how accumulated, how much
   - Records--checking account, loan payments, etc.

Variations

A. Students simulate a budget for first job (single person).

B. Students compute the purchase of a car--cost, financing, upkeep, insurance.

C. Students simulate a married couple's budget, considering the following possibilities:

   - Both working
   - One working
   - Family increase
   - Illness, hospitalization, accident, car loss, etc.--any major changes

D. Students work in groups to prepare budget. Discuss and evaluate each.

E. Discuss advantages and disadvantages of using charge cards.

F. Apply discussion questions to any variation (number 2 at top of the page).

G. Select other items from Consumer Economic Skills List in the Appendix (page 97).

Communication

Communication skills include verbal and nonverbal forms of communication, written expression and comprehension, and speaking and listening. These are perhaps the most basic of all transferable skills and virtually all life and occupational roles require some level of proficiency for successful performance. Indeed, to communicate is to learn, and the classroom provides an opportunity to learn and practice many types of communication skills which are equally important for survival on the job, in the home, and within the community.

Instructions and Messages

Activities

1. Give small groups or individual students a set of step-by-step oral instructions (assignment from text, out-of-class assignment, research project, etc.). Students may or may not take notes.
2. Students follow the instruction and complete the task; the instructions are repeated and students compare their results to the instructions.
3. Students discuss problems such as how to listen and how to note key words. Class relates this to job situations and employer directions.

Variations

A. Students receive written instructions with no verbal explanation.

B. Instead of receiving procedural instructions, students take messages in writing from a verbal explanation. Comparisons of messages for accuracy can follow.

C. Students bring transportation schedules, labels on medicine, directions for ordering catalog items, etc., to class and discuss as suggested above.

D. Students demonstrate a procedure to the class or to a small group (craft or hobby, day-to-day function) and the group offers feedback and suggestions on giving good instructions.

Memory

Activities

1. Small groups or individuals listen to a tape (about one to three minutes) of a newspaper, textbook, or magazine article.
2. Each group or student writes down every fact they can recall.
3. Class compares and combines lists into one.
4. Tape is repeated and adjustments to the list are made.
5. Class discusses the importance of an accurate memory. Students can point out ways they remember facts--key words, organization of article, main ideas with subpoints.
6. Several days later, the class lists facts from the tape and comparisons are made as before. Students also discuss problems in long term versus short term memory tasks.

Variations

A. Students listen to tapes of job procedures or company rules and follow the steps listed above.

B. Students receive an oral list of items needed for a future class assignment. On the day of the assignment, the items are checked.

C. Students list situations in their daily lives when accurate memory is vital. Students discuss possible situations on jobs when memory is vital.

Interaction

Activities

1. Each student is given a list of 10-15 descriptors. Examples:
   - Likes rock music
   - Favorite color is blue
   - Is a jogger, etc.
2. Student tries to find a person who fits each descriptor and secures the person's signature on the blank after the descriptor.
3. Class or small groups interact by discussing
   - Easiest descriptor to locate
   - Most difficult to locate
   - Unexpected information secured, etc.

Variations

A. Use descriptors pertinent to subject matter (art, math, etc.).

B. Use descriptors as subgroup for discussion of their commonality.

C. Students try this activity (revised) in the community, working as a student team.

Activities

1. Teacher reads brief article or story to an individual student, in a low voice, facing away from class.

2. Student repeats it to another, in the same way, continuing until all pupils have repeated the story.

3. Last student repeats it to the class. Teacher reads original. The last student version and the original version are compared.

4. Class discusses reasons for changes:

   - Factors that inhibited good listening
   - Factors that promoted good listening
   - Importance of eye contact, gestures, body language, etc.

Variations

A. Teacher plans interruptions and class discusses their effect.

B. Class repeats the exercise and checks for improved accuracy.

C. Instead of an article, teacher uses instructions for a simple task related to subject area, e.g., threading a sewing machine, constructing an equilateral triangle, inserting paper in typewriter.

D. Students bring in articles, instructions, etc., to read for listening exercises.

APPENDIX A

EXAMPLES OF TRANSFERABLE SKILLS AND CHARACTERISTICS

SKILLS NEEDED FOR WORK--
THE AMERICAN SOCIETY FOR TRAINING AND DEVELOPMENT LIST

I. Individual Competence

Communication Skills--Listening, oral communications, reading, and writing.

Comprehension--The ability to understand analyze communications.

Computation--Math skills

Culture--The ability to function effectively in a given culture due to an awareness of the opportunities that culture offers and a sense of historical perspective

II. Personal Reliability

This set of skills can best be characterized as "having your stuff together." They are largely keyed to self-assurance, reliability, and maturity:

Personal Management--When to brush your teeth; show up for work on time--how to organize oneself and act responsibly.

Ethics--The process of learning what one's values are and integrating them into one's life.

Vocational Maturity--Having motivation, as well as the ability to scope out the working world around you; what it takes to be successful, and your options.

III. Economic Adaptability

These are basically the skills that help one to know how to get and keep a job:

Problem-solving--The ability to process and retain information, as well as a sense of the need for continuing learning to achieve success in the workplace.

Employability--How to get and keep a job.

SOURCE: Adopted from L. Gaines, *Update: Basic Skills.* (Washington, D.C., 1988), American Society for Training and Development.

Career Development--Recognizing career options, the needed preparation to access these options, and the set of skills people need to be able to make successful transitions in the workplace.

IV. Group and Organizational Effectiveness

Interpersonal Skills--Those skills that allow one to interact and communicate effectively with others in the workplace.

Organizational Skills--Some sense that the individual and the organization are not the same thing. Recognizing organizations have a culture and personality.

Negotiation--Knowing what you want, being able to articulate it, and making a meaningful contribution to the decision-making process of the group.

Creativity--The ability to take the knowledge you have and turn it into something else. Innovation.

Leadership--Increasingly important as American business moves toward team concepts and participative management.

SUMMARY OF GENERIC SKILLS

Mathematics Skills (11 areas; 34 skill areas; 192 sub-divisions of skills)

1. *Whole numbers:* Read, write, and count; add and subtract; multiply and divide; word problems; round off

2. *Fractions:* Read and write; add and subtract; multiply and divide; word problems

3. *Decimals:* Dollars and cents; read, write and round off; multiply and divide; add and subtract; word problems

4. *Percent:* Read and write; ratio; proportion; percentage; rate; principle

5. *Mixed operations:* Equivalents; order of operations; word problems; quick calculations; average

6. *Measure:* Read graduated scales; read verniers; time; weight; distance; capacity

7. *Metric measure:* Weight; distance; capacity; weight conversion; distance conversion; capacity conversion

8. *Geometric figures:* Forms and figures; angles; draw, sketch; perimeters; areas; volumes

9 *Drawings and graphs:* Read graphs; read scale drawings; read assembly diagrams; read schematic drawings; draw graphs; measure from scale drawings; draw to scale

10. *Algebra:* Single variable, open sentences; single variable, powers and roots; solve given formulas; integers and rationals; variables and expressions; two variable, open sentences; quadratics

11. *Calculations:* Logs; slide rule; trigonometry calculations; calculator

Communications Skills (7 areas)

12. *Words:* Plurals; prefixes, suffixes,and root words; contractions and abbreviations; dictionary; synonyms, antonyms, and homonyms; meaning and context; books

13. *Listen:* Literal comprehension; interpretive comprehension; evaluative comprehension

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Source: Kawula, H. J. & Smith, A. DeW. *Generic skills: Handbook of occupational information.* Prince Albert, SK: Canada Manpower and Immigration Department, Training Research and Development Station, 1975.

14. *Talk:* Pronunciation; diction and word choice; fluency; organization of ideas; ask 6W questions; give information and directions; use telephone

15. *Read I:* Literal comprehension; interpretive comprehension; evaluative comprehension

16. *Read II:* Forms, notes; letters or memos; charts and tables; manuals; Roman numerals X; Roman numerals XXX; Roman numerals M

17. *Write I:* Phrases on forms; sentences on forms; paragraphs on forms; sentences; paragraphs; short notes; take notes

18. *Write II:* Form letters; single paragraph letters; internal memos; business letters; information reports; recommendation reports; technical reports

Interpersonal Skills (7 areas)

19. *Attending behaviors:* Physical; cognitive; reactive; covert

20. *One to one conversation:* Elementary conversation; task focused conversation; express own point of view; personable conversation; persuasive presentation

21. *Group discussion:* preparation; presentation of information or directions; control group decision making; group maintenance; participate in group discussion; respond to information or directions; persuasive presentation

22. *Oral presentations:* Preparation; factual information; listen, respond; conceptual, persuasive; reactive

23. *Instructional communication:* Establish training; instruction; demonstration; monitor; evaluate

24. *Supervisory communication:* Give directions; demonstrate; give praise; give discipline; prepare evaluation reports

25. *Interview/counsel communication:* Preparation; closed questions; open questions; confrontation; interview customers; interview job applicants; negotiate

Reasoning Skills (9 areas)

26. *Obtain job related information:* Tools, materials, and equipment; methods and procedures; sequence; other information; theories

27. *Organize information:* Sort objects; sort data; rate; rank; develop classifications

28. *Estimate:* Time; weight; distance; area; capacity; cubic measures; costs

29. *Tasks:* Sequence; priority

30. *Objectives and methods:* Goals; activities; alternatives; criteria; priority; analysis; deduction

31. *Diagnosis:* Cause and effect relationships; possible problems; priorities; possible methods; probing questions; use senses

32. *Problem solving:* Relevant information; alternative statements; select statement; alternative solutions; select alternative

33. *Plan and coordinate:* Activities and sequences; outline plan; identify resources; estimate resources; critical activities; detailed plan; resource requisitions

34. *Implement work:* Monitor results; standards of quality; standards of quantity; standards of completion time; priorities of standards; authority and responsibility; update plans

APPENDIX B

SOURCES OF ADDITIONAL INFORMATION

NATIONAL CENTER REPORTS RELATED TO OCCUPATIONAL ADAPTABILITY AND TRANSFERABLE SKILLS

Transferable Skills: Literature and Data Resources

McKinlay, B. *Characteristics of Jobs That Are Considered Common: Review of Literature and Research* (IN 102), 1976. ED141638

A review of various approaches for classifying or clustering jobs and their use in (a) describing the elements of commonality involved when people make career changes and (b) understanding better the concepts of occupational adaptability and skill transfer.

Altman, J.W. *Transferability of Vocational Skills: Review of Literature and Research* (IN 103), 1976. ED138834

A review of what is known about the transferability of occupational skills, describing the process or the facilitators of skill transfer.

Sjogren, D. *Occupationally Transferable Skills and Characteristics: Review of Literature and Research* (IN 105), 1977. ED146420

A review of what is known about the range of occupation-related skills and characteristics that could be considered transferable from one occupation to another, describing those transferable skills which are teachable in secondary and postsecondary career preparation programs.

Kirby, P. *Cognitive Style, Learning Style, and Transfer Skill Acquisition* (IN 195), 1979. ED186685

A review and synthesis of the literature in adult learning styles as they relate to the acquisition of transfer skills.

Knapp, J.E. *Assessing Transfer Skills*, 1979. ED186684

A review of traditional and nontraditional assessment with respect to the assessment of transfer skills.

Sommers, D. *Empirical Evidence on Occupational Mobility* (IN 193), 1979. ED185347

A review and synthesis of the literature on the characteristics of occupationally mobile workers and their jobs with suggestions for research.

Ashley, W.L., and Ammerman, H.L. *Identifying Transferable Skills: A Task Classification Approach* (RD Series No. 146), 1977. ED186651

A report of an exploratory study designed to test the usefulness of three classification schemes in identifying the transferable characteristics of tasks in diverse occupations.

Ashley, W.L. *Occupational Information Resources: A Catalog of Data Bases and Classification Schemes* (IN 104), 1977. ED146458

A quick and concise reference to the content of 55 existing occupational data bases and 24 job classification schemes. Abstracts of each database and classification scheme include such information as identification, investigator, location, documentation, access, design information, subject variables, occupation variables, and organization variables.

Wiant, A.A. *Self-assessment for Career Change: Does It Really Work? Summary Report of a Follow-up Study* (IN 191), 1979. ED183946

An analysis of the impact of self-assessment of one's subsequent employment experience. The particular assessment technique studies is one intended to help identify those skill attributes that have provided satisfaction in various life experiences. Outcome measures included skill utilization and job satisfaction.

Wiant, A.A. *Transferable Skills: The Employer's Viewpoint* (IN 126), 1977. ED174809

A report of the views expressed in nine meetings across the country by groups of local community and business representatives concerning the types of transferable skills required and useful in their work settings and how a better understanding of transferable skills could improve training and occupational adaptability.

Miguel, R.J. *Developing Skills for Occupational Transferability: Insights Gained from Selected Programs* (IN 125), 1977.

A report of clues and suggestions gained in the review of 14 existing training programs, with recommendations for practice that appear to have been successful in recognizing skill transfer and taking advantage of an individual's prior skills and experience.

Current Practices

Wiant, A.A. *Self-assessment for Career Change: Does It Really Work? Summary Report of a Follow-up Study* (IN 191), 1979. ED183946

An analysis of the impact of self-assessment on one's subsequent employment experience. The particular assessment technique studies is one intended to help identify those skill attributes that have provided satisfaction in various life experiences. Outcome measures included skill utilization and job satisfaction.

Wiant, A.A. *Transferable Skills: The Employer's Viewpoint* (IN 126), 1977. ED174809

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Miguel, J.R. *Developing Skills for Occupational Transferability: Insights Gained from Selected Programs* (IN 125), 1977.

A report of clues and suggestions gained in the review of 14 existing training programs, with recommendations for practice that appear to have been successful in recognizing skill transfer and taking advantage of an individual's prior skills and experience.

Instructional Strategies

Brickell, H.M., and Paul R.H. *Minimum Competencies and Transferable Skills: What Can Be Learned from the Two Movements* (IN 142), 1978. ED183965

A report comparing and contrasting potential impact of the transferable skills and minimum competency testing movements on school programs, staff, and students. Key questions and alternative strategies are presented to assist educational planners and administrators in formulating policy and establishing promotion or completion criteria in secondary and postsecondary education.

Selz, N.A., and Ashley, W.L. *Teaching for Transfer: A Perspective for Practitioners* (IN 141), 1978. ED185346

An informal discussion of the need for teachers and trainers to give more attention to developing transferability and transferable skills in students for learning and life performance applications. Practical suggestions and techniques for improving the capacity of students to transfer learned skills and knowledge to new situations are given.

Abram, R.E.; Covert, B.; and Kitchen, K. *Teacher's Guide to Transferable Skills.* 1979.

A guide designed to inform teachers and students of the importance of transferable skills in their daily lives. It stresses application and provides practice in applying transferable skills in the areas of problem solving, communication, computation, and relationships with others.

Krause, S,N.; Faddis, C.R.; and Ashley, W.L. *Taking Charge.* 1980.

A slide-tape and workbook combination designed to assist youth who are just beginning their work careers to become more aware of abilities and skills they may already possess that can help them in getting or changing jobs.

Occupational Adaptability: Theory, Policy, and Practice

Pratzner, F.C. *Occupational Adaptability and Transferable Skills* (IN 129), 1977. ED186717

A summary final report that presents and discusses an array of issues encountered in the various project activities and offers recommendations.

Ashley, W.L.; Laitman-Ashley, N.M.; and Faddis, C.R. (Eds.) *Occupational Adaptability: Perspectives on Tomorrow's Careers* (IN 189), 1979. ED183947

Proceedings from a national symposium. The topics focus on how training for adaptability can increase the use of human resources in the labor force.

Laitman-Ashley, N.M. (Ed.) *Women and Work: Paths to Power* (IN 190, 1979. ED185311

Proceedings from a national symposium that offer perspectives on the contribution of the development of transferable skills and occupational adaptability to the use of human resources, particularly of women in the work force. Topics cover five major transition points that any person can experience in a lifetime.

Selz, N. (Ed.) *Adult Learning: Implications for Research and Policy in the Eighties* (IN 194), 1979. ED185424

Proceedings from a national symposium on adult learning. Topics include state-of-the-art research into practice, policy implementation, and future directions.

Faddis, C.R. *The Worker as Proteus: Understanding Occupational Adaptability.* 1979. ED186732

A review and synthesis of literature on the factors, processes, and complexities of adaptive behaviors drawn from an eclectic array of research and thinking on human adaptation in life and in work. A heuristic model for understanding occupational adaptability is offered and some implications are drawn.

Faddis, C.R.; Duckles, R.; Woditsch, G.; and Brower, M. *Occupational Adaptability and Educational Policy: Missing Links between Working and Learning.* 1980.

A collection of commissioned papers exploring the policy-relevant implications of occupational adaptability for broad educational policy, pedagogy, and work organization policies and practices.

Ashley, W.L.; Celine, J.; and Faddis, C. *Adaptation to Work: An Exploration of Processes and Outcomes.* 1980.

A report of an exploratory study of the processes and outcomes of adaptation to work, based on the results of questionnaires and interviews conducted with recently employed workers aged 17-30.

In 1987 the National Center developed an integrated package on basic skills development for use by administrators, teachers, and counselors. The products in the package entitled *BASICS: Bridging Vocational and Academic Skills* are aimed toward strengthening the academic component of vocational programs through a joint effort of vocational and academic teachers and all who support them.

To be successful in strengthening students' basic skills, the joint vocational-academic approach must be infused thoroughly into the student's program. Developing an Instructional Program in the BASICS package provides teachers with information on the development or selection of appropriate applied basic skills instructional materials. Individual components are as follows:

- Instructional Materials Development discusses the prerequisite of materials development, alternative curriculum types, and guidelines for materials development and review.
- Supplemental Instructional Resources identifies sources of basic skills instructional materials for use with vocational students.
- Instructional Assistance in Specific Basic Skills prepares vocational teachers to help students gain reading, writing, oral communications, and math skills.

The success of an instructional program depends heavily on the techniques that teachers use to help students learn within the program. Targeted Teaching Techniques from the BASICS package provides vocational and academic teachers with assessment, planning and management tools to improve students' basic skills. Individual components are as follows:

- Technique for Management: Time for Learning lays foundations for more effective basic skills instruction through studying the use of classroom time.
- Techniques for Remediation: Peer Tutoring discusses the planning, implementation and evaluation of peer tutoring programs to strengthen students' basic skills.
- Technique for Computer Use: Software Evaluation describes a procedure for joint evaluation of educational software for basic skills instruction.
- Technique for Individualization: The Academic Development Plan guides school staff through systematic identification of individual student needs and steps to meet those needs.
- Techniques for Joint Effort: The Vocational-Academic Approach describes teaching techniques that vocational and academic teachers can use jointly to improve students' basic skills.

The National Center has also developed a series of six competency-based instructional modules to enable vocational teachers to assist students in basic skills development. These modules are as follows:

- o Assist Students in Achieving Basic Reading Skills
- o Assist Students in Developing Technical Reading Skills
- o Assist Students in Improving Their Writing Skills
- o Assist Students in Improving Their Oral Communication Skills
- o Assist Students in Improving Their Math Skills
- o Assist Students in Improving Their Survival Skills

Norton, R.E.; King-Fitch, C.C.; and Harrington, L.G. *Improving the Basic Skills of Vocational-technical Students: An Administrator's Guide*, 1986.

> This administrator's guide is intended to help administrators prepare for their role in basic skills improvement. The guide (1) provides background information on basic skills and vocational education, (2) gives overviews and examples of types of basic skills programs, staffing structures, and instructional approaches, (3) deals with program planning, and (4) provides guidelines for implementing the program and criteria for evaluation.

Norton, R.E.; Harrington, L.G.; Fitch, C.C.; and Kopp, K. *Integration of Academic and Vocational-technical Education: An Administrator's Guide* 1987.

> This guide provides the tools needed to plan an effective integrated program. It presents the factors that seem to facilitate success in implementing an integrated approach. It also describes model programs including how the programs were set up and the barriers and facilitators to implementation.

Pratzner, F.C., and Russell, J.F. *The Changing Workplace: Implications of Quality of Work Life for Vocational Education* 1984.

> Based upon a review of literature and research, and on site interviews and observations at nine firms that are recognized leaders in quality of work life activities, this report examines implications of QWL developments for future skill requirements and their potential consequences for vocational education policies and programs.

The National Center has developed four instructional guides to assist instructors in electronics, automotive repair, business and office education, and market education in development of transferable skills. Each guide describes examples of instructional

strategies and student learning activities for use in incorporating transferable skills into existing programs in these four occupational areas. They also identify supportive resources to aid in the development of already applicable skills. These guides are as follows:

Bhaerman, R.D., and Oliver, L.A. *Skills for the Changing Workplace: An Electronics Instructor's Guide.* 1985. (IN 255)

Bhaerman, R.D., and North, R.A. *Skills for the Changing Workplace: An Automotive Instructor's Guide.* 1985. (IN 256)

Warmbrod, C.P.; Bennett, F.R.; and Cope, G.W. *Skills for the Changing Workplace: A Business and Office Educator's Guide.* 1985. (IN 254)

Warmbrod, C.P., and Gordon, M.J. *Skills for the Changing Workplace: A Marketing Educator's Guide.* 1985. (IN 253)

National Surveys

Selz, N.A.; Jones, J.S.; and Ashley, W.L. *Functional Competencies in Occupational Adaptability and Consumer Economics,* 1979.

> Perceptions of national adult samples are reported. Document includes where competencies should be taught--at home, at school, on-the-job, self-taught--and how important these competencies are in successful work and life activities.

Selz, N.A., and Coleman, D.D. *In the Public's Opinion: Consumer Economic Competencies for the School,* 1980.

> A report on the findings and implications of 1979 national survey of adults focusing on the school's role and responsibility for teaching consumer-related competencies.

Selz, N.A. *The Teaching of Employability Skills: Who's Responsible?,* 1980.

> A national survey of the general adult public, public school teachers, high school seniors, and employers assesses employability competencies, and whether these competencies are (and should be) learned in the school, the home, or on the job.

SAMPLES OF OTHER RELATED RESOURCE MATERIALS

Group Problem-Solving Skills

Educational Leadership (Association for Supervision and Curriculum Development) 42, no. 1 (September 1984): entire issue.

This entire issue deals with and bears the title "Thinking Skills in the Curriculum." In an overview of the issue, the editor writes that "a fully adequate curriculum . . . should provide for teaching of thinking and about thinking as well as teaching for thinking. Planning such a curriculum is complicated by the diversity of approaches and the kinds of thinking sought in various programs" (p. 3). Here are some of the articles in the magazine: "Critical Thinking Is Not Enough"; "Kinds of Thinking Taught in Current Programs"; "How Can We Teach Intelligence?"; "The Key to Higher Order Thinking Is Precise Processing" ("Teachers can focus on thinking skills by having students describe their mental processes and giving them feedback on erroneous or incomplete reasoning" [p.67]); and "How to Keep Thinking Skills from Going the Way of All Frills" ("Success in teaching thinking skills results when content objectives are contingent on activities that also promote thinking and when thinking skills results when content objectives are contingent on activities that also promote thinking and when thinking skills permeate the entire curriculum" [p. 75]). For those who wish to infuse problem-solving methods into their teaching, reading this journal from cover to cover is a must.

Resnick, L.B. *Education and Learning to Think*. Washington, DC: National Academy Press, 1987.

This book addresses how children learn reasoning and other complex thinking skills and what American schools can do to teach more effectively what have come to be called "higher order skills."

Beyer, F.S. (Ed.). *Teaching Thinking and Problem Solving*. (a bimonthly newsletter). Philadelphia, PA: Research for Better Schools, 1988.

This bimonthly newsletter is a unique medium that keeps you current on new ideas and emerging programs in this critical area of education. Each one reviews the key issues in problem solving, critical, and creative thinking. Special sections inform you of new books and papers, upcoming lectures and conferences, contrasting opinions, and nationwide calls for papers on a wide range of topics. This refreshing and informative newsletter is an excellent way to keep up with developing issues and events in your growing branch of education.

Problem Solving Strategies: The Synectics Approach. Del Mar, CA: CRM McGraw-Hill, n.d. 28 min., color, 16mm, $495 (purchase), $50 (rental, 1-3 days), or free preview.

From this film, viewers learn a simple set of innovative strategies that can be used to stimulate organizational creativity and streamline problem solving. The techniques used are applicable to both individual and group idea-generating sessions, in a variety of business, organizational, and industrial areas.

Problem Solving Strategies: The Synectics Approach. University Park: Audio-Visual Services, The Pennsylvania State University, 1980. 28 min., color 33303, $23.50 (rental).

This film depicts a case study of a problem-solving laboratory conducted by Synectics, Inc., a consulting firm that specializes in teaching the process of creative problem solving. It shows strategies that can be used to stimulate organizational creativity and streamline problem solving for both individual and group idea-generating sessions in a variety of business, organizational, and industrial areas.

Daggett, W.R., and Marrazo, J. *Solving Problems/Making Decisions.* Cincinnati: South-Western Publishing Co, 1983.

This text-workbook is designed to help students acquire the knowledge and ability to solve problems and make decisions. Students are provided with problem-solving activities and decision-making models to follow as they analyze themselves and compare their attributes for making career and life choices. End-of-chapter activities include short-answer questions, a vocabulary list, and a chapter summary.

Cinnamon, K.M., and Matulef, J. (Eds). *Applied Skills Series.* San Diego: University Associates, n.d.

Each volume in this series of four volumes contains 24 hours of result-oriented training designs that can be used in part or in whole. All forms are ready to use, can be duplicated without modification, and can be "mixed and matched." Each volume in the series may be purchased individually. The two volumes that are most relevant to this guide are as follows:

Volume 2: Creative Problem Solving. The content includes recognizing a problem when and where it exists, anticipating difficulties during the problem-solving process, determining objectives or goals, establishing results desired when the problem is solved, generating creative and realistic solutions, evaluating alternative solutions against predetermined criteria, implementing the chosen solution in an organized manner, and evaluating results.

Volume 3: Human Relations Development. Topics covered include options in interpersonal styles; accurate self-perceptions, awareness of others' values, attitudes, and goals; personal assumptions and the work setting; constructive feedback; empathy; dynamic listening; accurate identification of needs; developing trust; constructive confrontation; assertiveness; appropriate self-disclosure; and modeling.

Eggland, S.A., and Williams, J.W. *Human Relations at Work.* 2d ed. Cincinnati: South-Western Publishing Co., 1981.

This text-workbook offers students the opportunity to participate in a well-organized series of activities dealing with human relations. The workbook develops an understanding of and appreciation for human relations; encourages an understanding of oneself; helps students deal with fellow employees, employers, and customers; and develops links between human relations skills and communication

skills. Written in an easy, informal style, the text is useful in any vocational program that prepares students for the world of work. It contains 6 chapters and 40 class activities that require approximately 30 hours to complete.

Listening: A Key to Problem Solving. University Park: Audio-Visual Services, The Pennsylvania State University, 1979. 22 min., color 22785, $19.50 (rental).

This film emphasizes key barriers to listening and solutions that may be tried when individuals don't listen effectively. It provides a realistic problem-solving exercise by presenting many options and potential solutions to a particular listening problem. The case study involves a manager who doesn't "hear" a competent employee's verbal and nonverbal objections to a promotion, overrides the objections, and now must deal with an employee who was a good workers but is a poor manager.

Fulton, P.J. *Exploring Human Relations*. Boston: Houghton Mifflin Co., 1982.

In this text-workbook, students learn the skills they need for success with people. They gain a clear understanding of the basic concepts of human relations, focusing on developing personal understanding, communicating with others, becoming an effective employee, and setting personal and career goals. Students participate in case studies, readings, group discussions, and role playing, all of which help build problem-solving and decision-making skills.

O'Connor, J.R. *Speech: Exploring Communication*. 2d ed. Englewood Cliffs, NJ: Prentice-Hall, 1984.

This textbook gives students a thorough introduction to basic elements of communication, interpersonal communication, public speaking, debate and parliamentary procedure, and performing arts. The text also includes extensive end-of-chapter activities.

Spelling Made Easy. New York: Gregg/McGraw Hill Book Co., 1984.

This textbook offers practical instruction for learning to spell the words most commonly used in business correspondence. Each lesson is only four pages long, with two pages of instruction followed by two pages of exercises. Recorded quizzes (on cassettes) for this workbook are available.

Words Made Easy, New York: Gregg/McGraw Hill Book Co., 1984.

This text-workbook is a flexible program for spelling and vocabulary mastery. It combines the entire *Spelling Made Easy* program with the entire *Vocabulary Made Easy* program.

Vocabulary Made Easy. New York: Gregg/McGraw Hill Book Co., 1984.

This text-workbook emphasizes the vocabulary that students must master to succeed on the job. Each lesson is four pages long, with two pages of text instruction followed by two pages of exercise. The writing style keeps students interested, and the frequent checkup exercises at regular intervals provide immediate reinforcement of the text principles.

Kraska, M.F. *Communication Skills for Trade and Industry.* Cincinnati: South-Western Publishing Co., 1985.

This new book is based on the premise that the ability to communicate effectively is necessary for the success of all those "who wish to become productive and active members of the modern industrial teams" (p. v). The author notes that the need to acquire effective communication skills is becoming increasingly evident for students, not only in their career function, but also in preparing for changing job requirements. This text-workbook therefore addresses the need of students for relevant communication skills in related vocational programs. As an integrated general communications approach to the subject matter, the text includes basic applications materials in written, verbal, and technical skills development.

Frye, H. *Teaching Reading in Vocational Education.* Columbus: Vocational Instructional Materials Laboratory, The Ohio State University, 1982.

This manual contains many student activities for providing help to students who lack needed skills for doing required reading in the vocational content areas. The manual allows the instructor to teach reading skills without students' knowing that reading skills are being emphasized. Student reading interest, methods of determining the reading levels of books, context clues, spelling, and comprehension are just a few of the many topics covered in this teaching aid.

Lamb, M., and Perry, D. *Word Studies.* 7th ed. Cincinnati: South-Western Publishing Co., 1981.

This text-workbook contains 85 activities that build students' confidence in their abilities to spell and use words correctly. In addition, students acquire a greater appreciation for, and mastery of, the English language.

Linking Basic Skills to Entry-level Auto Mechanic and Auto Body Worker Tasks. Salt Lake City: Salt Lake Skills Center, Utah Technical College, 1983.

Reading, writing, listening, speaking, and mathematics are an integral part of the duties of many occupations. Administrators, curriculum developers, counselors, and instructors, particularly, require information about what basic skills workers need to perform a job in order to select the most occupationally relevant instructional materials and assessment instruments for use with students. They can then more easily determine entry and exit criteria for their training programs. They can also instruct in the basic skills more effectively during vocational training. In preparing for this work, the authors first identified the duties of the entry-level auto mechanic and autobody worker by using a modified DACUM (Developing a Curriculum) occupational analysis process. In this process, a panel of expert workers determined the essential duties of their occupations. The panel then identified specific basic skills necessary to accomplish each task.

Based on the results of this analysis and the application of general criteria for instructional resource and assessment review, lists were formulated of the most relevant basic skills instructional and assessment resources available.

Williams, J.W., and Eggland, S.A. *Communicating at Work.* South-Western Publishing Co., 1979.

This text-workbook will help students to communicate more effectively at work. It contains illustrations, exercises, and end-of-chapter class activities designed to aid them in practicing effective communication. Approximately 30 hours are required to complete the workbook. The updated version of a companion workbook, entitled *Communication in Action,* is due for release in late 1984.

Oregon State University and Oregon Department of Education. *Speaking and Listening in Vocational Education.* Salem, OR: Marion Education Service District, 1983.

Oregon State University and Oregon Department of Education. *Writing in Vocational Education.* Salem, OR: Marion Education Service District, 1983.

Oregon State University and Oregon Department of Education. *Reading in Vocational Education.* Salem, OR: Marion Education Service District, 1981.

This series of three handbooks has been developed jointly by the Vocational-Technical Education Department of Oregon State University and the Division of Vocational Education of the Oregon Department of Education--in cooperation with several Oregon school districts--that should be very useful to vocational education teachers.

As the authors of the first handbook state, "Our goal was not to make a speech teacher out of your, but to give you some very practical assistance in working with your students" (p. i). The first sections are devoted to skills and assessments; the last part of each section describes the concepts and provides suggestions for implementing skills into the classroom via an assortment of activities. The writing handbook is divided into seven major sections. The first describes methods of evaluating writing assignments; the next six are organized around the major areas of writing: sentences, paragraphs, composition, correspondence, summary and note taking. The last section describes rewriting, editing, and proofreading. The reading handbook also is divided into seven sections. The first six are organized around two major headings: the topic and background information (which includes suggested activities and resources). The last section contains ideas to enrich your efforts to improve vocational students' reading skills.

Williams, J.W., and Eggland, S.A. *Communicating at Work.* Cincinnati: South-Western Publishing Co., 1979.

This text-workbook will help students to communicate more effectively at work. It contains illustrations, exercises, and end-of-chapter class activities designed to aid them in practicing effective communication. Approximately 30 hours are required to complete the workbook. The updated version of a companion workbook, entitled Communication in Action, was released in late 1984.

Sampson, and Marienhoff. *The American Economy: Analysis, Issues, Principles.* 2d ed. Boston: Houghton Mifflin Co., 1983. Text; Student Workguide; Instructor's Manual and Key.

This textbook discusses basic economic principles such as monetary policy, economic wants, production factors, and free market economy, as well as current consumer issues such as energy, unemployment, and inflation. This is a good textbook to use as a reference for the study of economics.

Wyllie, Eugene D., and Warmke, Roman F. *Free Enterprise in the United States.* Cincinnati, OH: South-Western Publishing Co., 1980. Text; Student Supplement; 3 Filmstrips and Cassettes; Instructor's Manual.

The textbook describes the free enterprise system in the United States and its impact on the American way of life in a practical way. The primary focus is on the unique quality of the free enterprise system and how the individual operates within the system as a worker-producer, a consumer, and a citizen-voter. Practical activities are included at the end of each chapter, and enough material is provided for one semester of instruction. A student supplement offers a variety of personal applications, and three filmstrips with accompanying cassettes present vital concepts covered in the text.

The Economy Game. Culver City, CA: Social Studies School Service, n.d. Board game includes instructions, playing board, 6 sets of cards, play money, 1 die, goods and credit chips, and place markers.

This simulation board game of economic decision making is designed to demonstrate how our economy works. Players invest in businesses, savings accounts, and stocks; produce and purchase goods at prices regulated by supply and demand; earn college degrees and training credentials for economic advancement; and contend with government regulation. High risk choices, such as investing in stock or starting a business, exhibit greater potential for financial reward than such "safe" choices as living off salaries and interest from savings accounts.

Clawson, E.U. *Our Economy: How It Works.* 2d ed. Menlo Park, CA: Addison-Wesley Publishing Co., 1984.

This text introduces important economic principles through studies of the production of familiar goods. It is written in a style that can be easily understood by both junior and senior high students. The text includes student involvement activities in fact finding, analysis, decision making, and role playing. A related text-workbook supplement, entitled *Our Economy: How It Works, Activities and Investigations,* is also available.

Ford, L.G. *Economics: Learning and Instruction.* Cincinnati: South-Western Publishing Co., 1982.

This textbook is a practical how-to manual that divides economic theory into eight simplified, yet comprehensive, concept areas: alternative economic systems, supply and demand, income, profits, spending and saving, fiscal policy, the Federal Reserve system, and international economics. Teaching applications follow

the presentation of theory, illustrating which theory should be covered and how to present it.

Heilbroner, R., and Thurow, L. *Economics Explained.* Englewood Cliffs, NJ: Prentice-Hall, 1983.

Two of America's most respected economists have written this basic, jargon-free guide to help students better understand how economics directly affect their lives. It covers such issues as inflation, unemployment, interest rates, investing, and saving.

Miller, IR.L. *Economics Today and Tomorrow, Enterprise Edition.* New York: Harper and Row Publishers, 1975.

This is a clearly written textbook program that promotes student awareness and understanding of how the U.S. economy works. The book develop economic skills, relates theory to real-world situations, examines current economic issues, and profiles important economists. It is combined with a sequential development of reading, writing, statistical, speaking, and study skills. Case studies and discussion questions are also provided.

Peterson, H.C. *Economics of Work.* Cincinnati: South-Western Publishing Co., 1983.

This text-workbook is designed to help students gain a better understanding of our system of economics. It will help students make the natural linkage between the overall structure of the economy, how it functions, and how workers play a meaningful role in the input side of the economic process. Students will gain an understanding of the role of the individual within a firm, the role of a firm within the economic system, and the interrelationship of government and private enterprise. Students will be exposed to various types of economic problems and will be asked to apply economic concepts to the decision-making process in order to gain an understanding of the economic system.

Burke, Ronald S., and Bittel, Lester R. *Introduction to Management Practice.* New York: Gregg/McGraw-Hill Book Co., 1981. Text; Course Management Guide and Key; Self-study Guide; Computer Simulations in Management.

Introduction to Management Practice is a college preparatory program ideally suited for any high school business-related curriculum that emphasizes the teaching of management principles and practices. Written at a 10th- through 11th-grade reading level, it is an introductory management text that addresses the needs of college-bound high school students who will be making critical career choices and entering the job market in a relatively short while. Major topics include the management functions of planning, organizing, coordinating, staffing, directing, and controlling. The interpersonal and human relations aspects of managing--working with individuals and groups, communicating, motivating, and providing leadership--are also emphasized. Through this program, students also come to learn how the social, political, economic, and legal environment impacts upon business operations and managerial decision making. A self-study guide gives students the option of learning at their own pace, and two computer simulations are available that require students to develop long-range management objectives

and then interpret the objectives into operating strategies for their departments (both simulations are written in BASIC and may be used on a variety of hardware).

Business Management and Ownership. Stillwater, OK: Curriculum and Instructional Materials Center, 1982. Teacher's Manual and Binders; Student Manual.

The ever-demanding world of management is the focus of these instructional materials. Planning, organizing, leading, and controlling functions of supervisory management are explored. Units are written in the following areas: economics of free enterprise, principles of management, store layout and security, merchandising, credit services, and personnel management. The last four units are designed to provide small business ownership information for those interested in starting their own firm.

Canei, Robert A. *Who Profits from Profits?* Columbus: Vocational Instructional Materials Laboratory, The Ohio State University, 1978. Manual.

This publication aids students in identifying and analyzing the basic everyday financial operations of a business. It provides a clarification on the subject of profits--what they are and who benefits from them.

Peterson, H. Craig. *Economics of Work.* Cincinnati, OH: South-Western Publishing Co., 1983. Text-Workbook; Instructor's Manual.

This text-workbook is designed to help students gain a better understanding of the U.S. system of economics. It will help students make the natural linkage between the overall structure of the economy, how it functions, and how workers play a meaningful role in the input side of the economic process. Students will gain an understanding of the role of the individual within a firm, the role of a firm within the economic system, and the interrelationship of government and private enterprise. Students will be exposed to various types of economic problems and will be asked to apply economic concepts to the decision-making process to gain an understanding of the economic system.

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